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WHAT DETERMINES THE ACADEMIC ACHIEVEMENT OF HIGH SCHOOL STUDENTS

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THE ATTENTION OF psychologists, and others concerned with predicting behavior, has been turning more and more to the underlying, motivational, and personalogical factors involved. The reason for this emphasis is not to be found in any doctrinaire predilection for certain variables, for certain conceptual schemes, or even for one kind of vocabulary over another. On the contrary, straightforward empirical justification exists for such an emphasis—the more accurate and reliable predictions which are made possible by including such data in the forecasting equations.

In the academic domain the attempt to consider non-intellectual factors in predicting scholastic achievement has not, however, been particularly successful up to the present time. In one of the early reviews of the literature on this topic (1933), Stagner (7) found only negligible relationships between personality tests and grade averages. There appeared to be slight tendencies for students with higher scores on tests for introversion, dominance, and self-sufficiency to obtain higher grade averages than those with lower scores. Many of those early studies, however, were characterized by several serious deficiencies. In the first place, most of the personality tests used were based on inefficient, a priori methods of test construction, and could hardly be depended upon to yield a valid assessment of personality factors.

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*This study was supported by a research grant from the National Institute of Mental Health, National Institutes of ealth, U.S. Public Health Service.

Second, the typical approach was the rather aimless empirical one of merely correlating a series of test scores with grade averages to see what might be discovered. The weakness in this procedure is that the personality scales themselves were not constructed with any regard for problems of academic achievement, and would, accordingly, only in the most fortunate cases contain relevant and properly weighted items for such a task. For examply, would one expect to find a systematically significant relationship between, say, the morticians key on the Strong Vocational Guidance Blank and high school honor point ratio?

The point here is not that such a relationship could not be discovered, but of the extremely inefficient way in which it is measured. If a test designed to measure personal dominance also correlates +.15 with grade average, the most probable assumption is that some, but not all, of the items in the dominance scale are also predictive of academic success. With a correlation of the magnitude posited it is probably also safe to assume that some of the individual items in the dominance scale are negatively correlated with academic performance. In any situation where one's primary aim is to forecast academic achievement the sensible step would seem to be to discover the subset of "dominance" items which is also predictive of achievement, and then to use this subset (along with similar subsets from other scales) to make the prediction. As can be seen in this hypothetical example, and as can be inferred from the universally low correlations between conventional personality scales and measures of scholastic success, to do otherwise is to reduce and attenuate any resulting predictive index.

One of the first studies clearly to circumvent problems of the type outlined was that of Borow. (2) He devised a series of 399 items, all relating to academic performance, insofar as intuition could determine. These items were then analyzed individually to discover which ones would, in fact, reliably differentiate under- and over-achievers. The resulting scale correlated +.30 with college grades in cross-validating samples, and combined with capacity tests to give multiple correlations of +.50. Borow's methodology would appear to be excellent. The only criticism the writer would make of this study would be of the items themselves. Their content is obvious, and the "best" responses are relatively easy to guess. Furthermore, the style and syntax of the items are slightly formal and pedantic. Test items, if they are to tap important motivational facets of personality, should probably be written in a more subtle and idiomatic way.

Other workers have since utilized similar methodologies. Altus (1) item analyzed the Minnesota Multiphasic Personality Inventory (5) searching for items predictive of academic achievement. Unfortunately, his criterion groups were so poorly matched for sex (22 males, 3 females in the "high" group; and 9 males, 16 females in the "low" group) that an individual item's survival might be as much due to sex differentiation as to scholastic. Owens and Johnson (6) carried out a similar analysis, as did the present writer. (4)

In the latter study, a 34-item scale for the MMPI was developed which correlated +.43 with HPR, and +.11 with the Otis intelligence test in the original sample of 231 cases, and +.25 with HPR and -.02 with the Otis in a cross-validational sample of 272 high school seniors.

An inspection of the item content of this scale indicated several pervasive trends associated with superior scholastic achievement: the higher ranked students appeared to be more conventional and conforming, somewhat more tense and apprehensive, and more self-confident and assured in social and personal interaction. These trends were in most respects similar to those observed in the other studies.

Present Study

The present study represents an attempt to incorporate and apply the discoveries and findings of the studies previously cited to the problem of forecasting scholastic achievement. It was felt that sufficient preliminary work had been done to outline and specify the personalogical areas pertinent to this issue, and that the next step would be to synthesize these past findings and test them out on a broad and systematic basis.

The first task in this endeavor was the creation of an item pool. The best items from the previous studies were combined and edited in accordance with the requirements mentioned above, and in addition over a hundred new items were written. These new items were designed to focus more directly on the trends and tendencies which had been inferred from earlier findings. For example, one of these inferences was that more successful students are less rebellious under tradition and convention. This hypothesis led directly to the writing of items such as "I must admit I find it very hard to work under strict rules and regulations," (predicted answer, false) and "There is something wrong with a person who can't take orders without getting angry or resentful" (predicted answer, true). The final result was a booklet of some 200 items, about half having shown previous empirical promise, and about half having been written in accordance with empirically based hypotheses.

The booklets were then administered to the senior class students in four Minnesota high schools.[1] These four schools, and the number of students tested in each, were as follows: (A) Bemidji, 135; (B) Dawson, 35; (C) Redwood Falls, 66; (D) St. Cloud, 205.

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[1] The writer wishes to thank the following school officials for their very kind help and cooperation on this study: Mr. R. B. Clay, Mr. C. H. Dahlin, Mr. H. B. Gough, Mr. R. Gray, Mr. J. W. Smith, Mr. R. H. Sorenson, Mr. G. Ramseth, and Mr. R. H. Witt.

Criterion subsamples for the item analyses were formed for each school by selecting pairs of subjects matched for sex and intellect, but widely separated by the overall high school grade average. The numbers of pairs in schools B and C were too few to be considered separately so they were grouped. This left three sets of criterion subsamples constituted as follows: School A, 30 (15 females, 15 males) vs. 30 (15 of each sex); Schools B and C, 19 (10 females, 9 males) vs. 19 (10 females, 9 males), and School D, 40 (20 females, 20 males) vs. 40 (20 of each sex). Each item was then analyzed, and all those which differentiated in all three comparisons were retained. These items, and the direction of response indicative of better scholastic performance, are given in Table I.[2]

TABLE I

ITEMS INCLUDED IN THE ACHIEVEMENT SCALE

1. I have a very strong desire to be a success in the world. (True)
2. I usually go to the movies more than once a week. (False)
3. I have a tendency to give up easily when I meet difficult problems. (False)
4. I wake up fresh and rested most mornings. (True)
5. When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing. (False)
6. I have had very peculiar and strange experiences. (False)
7. Once a week or oftener I feel suddenly hot all over without apparent cause. (False)
8. I have little or no trouble with my muscles twitching or jumping. (True)
9. I don't seem to care what happens to me. (False)
10. In school I was sometimes sent to the principal for cutting up. (False)

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[2] An extended version of Table I giving the proportion in each subsample responding true, and the significance tests, has been filed with the American Documentation Institute. Order Document 3238 from the American Documentation Institute, 1719 N Street, N. W., Washington 6, D. C., remitting $1.00 for microfilm (images 1 inch high on standard 35 mm. motion picture film) or $1.00 for photocopies (6 x 8 inches) readable without optical aid.

11. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it. (False)
12. I certainly feel useless at times. (False)
13. I have the wanderlust and am never happy unless I am roaming or traveling about. (False)
14. My parents have often disapproved of my friends. (False)
15. I should like to belong to several clubs or lodges. (True)
16. My way of doing things is apt to be misunderstood by others. (False)
17. I have had blank spells in which my activities were interrupted and I did not know what was going on around me. (False)
18. I was a slow learner in school. (False)
19. I liked "Alice in Wonderland" by Lewis Carroll. (True)
20. There never was a time in my life when I liked to play with dolls. (False)
21. I am inclined to take things hard. (True)
22. I am often said to be hot-headed. (False)
23. I like to keep people guessing what I'm going to do next. (False)
24. If given the chance I would make a good leader of people. (True)
25. When I was going to school I played hooky quite often. (False)
26. While in trains, busses, etc., I often talk to strangers. (False)
27. I like to read about history. (True)
28. Lawbreakers are almost always caught and punished. (False)
29. I like to talk before groups of people. (True)
30. I am often bothered by useless thoughts which keep running through my mind. (False)
31. I must admit I find it very hard to work under strict rules and regulations. (False)
32. I always try to do at least a little better than what is expected of me. (True)
33. I would be very unhappy if I was not successful at something I had seriously started to do. (True)
34. My parents were always very strict and stern with me. (False)
35. I often get disgusted with myself. (False)
36. I think I would like to belong to a motorcycle club. (False)
37. Society owes a lot more to the business man and the manufacturer than it does to the artist and the professor. (False)
38. I used to like it very much when one of my papers was read to the class in school. (True)
39. My parents have been dissatisfied with their economic position in life. (True)
40. Planning one's activities in advance is very lifely to take most of the fun out of life. (False)
41. There is something wrong with a person who can't take orders without getting angry or resentful. (True)
42. I am sometimes cross and grouchy without any good reason. (False)

43. I like to collect things, such as stamps, flowers, house plants, etc. (True)
44. I am so touchy on some subjects that I can't talk about them. (False)
45. I like to plan out my activities in advance. (True)
46. I think I would like the work of a school teacher. (True)
47. I often lose my temper. (False)
48. I like large, noisy parties. (False)
49. I plan very carefully about which school courses I will take. (True)
50. I usually like to study. (True)
51. Some of my school subjects seem to be a complete waste of time. (False)
52. A college education is a waste of time for me. (False)
53. I usually try to make the best school grades that I can. (True)
54. I would rather be out working at a job than going to school. (False)
55. I often come to class without having studied the lesson for that day. (False)
56. I have to wait for the right mood before I can sit down and study. (False)
57. Even when I do sit down to study it is hard to keep my mind on the assignment. (False)
58. I often doze off and let my mind wander during class periods. (False)
59. It is often hard for me to understand what the questions are driving at in a school test. (False)
60. I think that some of my teachers have a "grudge" against me. (False)
61. It makes me nervous to be called on in class. (False)
62. I always make a point of getting my school assignments handed in on time. (True)
63. I can truthfully say that I like just about everything about school. (True)
64. It is hard for me to keep interested in most of my school subjects. (False)

A survey of this list for possible trends and clusters suggests the following tendencies as characteristic of the more successful students:

1. Optimistic self-confidence, self-control, capacity for sustained and diligent application.
2. Acceptance of conventions, rejection of the frivolous and diversionary; orderliness, planfulness, and basic seriousness of purpose.

3. Personal efficiency, vitality, and integration.
4. Acceptance of others, denial of ill-will and animosity, absence of interpersonal friction, emphasis on equanimity and rationality.
5. Sense of academic effectiveness, good study habits, sense of accomplishment.

The question which now arises concerns the validity and reliability of these 64 items when considered as a scale. The reliability of the "scale," to be called Ac$_r$ (achievement, revised)—to distinguish it from the earlier Ac scale presented (see (4))—is evidenced by an uncorrected split-half correlation of +.72, SE = .07, obtained in School D. It is expected that test-retest coefficients would be higher, as they typically are with material of this type.

The validity of the Ac$_r$ scale for predicting grade averages is indicated in Table II. The correlations of Ac$_r$ with HPR are above +.50 in each of the four schools. The correlations with I. Q. are higher than had been hoped, but still low enough to permit an appreciable increase in the total predictive index when Ac$_r$ and I. Q. are combined in the multiple correlations.

The total 64 item scale contains 16 items pertaining directly to present school behavior. For some purposes it might be desirable to eliminate these items, for example in giving the test to subjects not enrolled in school. The validity coefficients of the 48 "non-academic" Ac$_r$ items with HPR are as follows: School A, +.34; School B, +.41; School C, +.61; School D, +.51.

A cross-validating sample of 234 high school seniors was tested in Rock Island, Illinois,[3] using a shortened 38-item version of the scale.[4] The correlation of Ac$_r$ with high school grade average was

[3] Mr. Charles O. Austin, Jr., very kindly made arrangements for this testing.

[4] This shortened 38-item version is the form in which the scale is being included in the writer's California Psychological Inventory, a new personality test devoted to the appraisal of positive, favorable aspects of behavior and individual functioning. The 38 items include the following (from Table I): 1, 2, 3, 4, 5, 6, 9, 10, 12, 13, 14, 16, 17, 18, 19, 22, 23, 24, 25, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 40, 41, 42, 44, 45, 46, 47, and 48. Eighteen of these 38 items were taken by permission from the Minnesota Multiphasic Personality Inventory (see Hathaway, S. R., and McKinley, J. C., The Minnesota Multiphasic Personality Inventory (Minneapolis: The University of Minnesota Press, 1943). The 18 items referred to are these: 4, 5, 6, 9, 10, 12, 13, 14, 16, 17, 18, 19, 22, 23, 24, 25, 27, and 44.

TABLE II

INTERCORRELATIONS INVOLVING THE Ac SCALE

	School A N - 135		School B N - 35		School C N - 66		School D N - 205	
	r	SE	r	SE	r	SE	r	SE
Ac_r vs. HPR	.52	.09	.53	.20	.63	.12	.54	.07
Ac_r vs. IQ	.28	.09	.34	.20	.37	.12	.23	.07
IQ vs. HPR	.62	.09	.80	.20	.76	.12	.63	.07
HPR vs. IQ, Ac_r*	.72	.05	.84	.05	.85	.04	.73	.03

*Multiple correlations

TABLE III

SUMMARY STATISTICS FOR THE Ac SCALE

		Total Ac Scale (64 items)		Abbreviated Ac Scale (48 non-academic items only)	
School	N	M	SD	M	SD
A	135	38.30	8.83	28.25	5.91
B	35	40.00	6.67	28.54	4.48
C	66	38.30	8.58	27.88	5.58
D	205	36.92	8.74	26.73	5.90
Total	441	37.56	8.68	27.49	5.79

.44, and with I. Q., .26. The I. Q. measure itself correlated .47 with grades. The multiple correlation of Ac_r and I. Q. with grade average was .62. The scale was also administered to an introductory psychology class of 180 students in the summer of 1950 at the University of California, Berkeley,[5] with a correlation of .18, SE = .07, with course examinations being obtained. These latter results are similar to those of the earlier study (4), in indicating that a somewhat different constellation of factors enters into success at the college level. Some recent exploratory work of the present writer indicates that self-sufficiency and independent judgment, for example, play a more prominent role in college academic success than in high school.

The range and distributions of scores which can be anticipated on Ac_r are suggested by Table III.

The last question to be taken up in the present paper is the relatively practical one of how such a scale can be used, and what significance should be attached to high and low scores. This question might be answered by saying that higher scores are suggestive of greater seriousness of purpose, more persistence in academic and scholastic pursuits, and more diligent and systematic work habits.

The items have also been selected in such a way as to minimize the relationship to intelligence. Scores on the test can thus be used in conjunction with intelligence test measures to make a good estimate of how well the person will do academically. For example, a student of average ability, but with a high Ac_r score, will probably do better than average work. A student of exceptional ability, but with a low Ac_r score, would be expected to achieve school grades only somewhat above average.

Various specialized interpretive conventions will undoubtedly be established as research on the scale continues. In the meantime it would appear that the scale is now ready for practical use and application.

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[5] This testing was made possible through the cooperation of Dr. Rheem F. Jarrett.

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ART IN WRITING FOR EDUCATIONAL PERIODICALS: THE ENDING

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PROCEEDING ON THE assumption that contributors to educational periodicals should employ art in their writing in addition to having something to say, that such art can be learned when its elements are identified, and that an analysis of its elements should be made piecemeal with first emphasis on the introduction, an earlier article in a series on the elements of excellence in writing was published by the Journal on what it takes to compose attractive introductions.[1] But the big apples should not all be on top of the basket. The high lights of a discourse were assumed in the earlier report to be the beginning and the end, but the main body also should be readable, if not artistic. The purpose of this second survey in the series was to identify elements of excellence in composing effective endings. What color and what size of apples should be in the bottom of the basket?

Some educational writings end abruptly, giving the impression that the writer died before composing the final paragraph. Others end so awkwardly that it might have been as well if the writer had died. Many a student has been frustrated by reading along eagerly in a magazine, never suspecting that he was nearing the end of an article, and, turning the page, found that there was no more. He was left dangling. Well-written music has a coda, a concluding passage, the function of which is to bring the composition to a cogent and well-proportioned close. One can't, with scissors, clip off a staff at any arbitrary point, draw a double bar, and write Q. E. D. In like manner, an educational exposition must be rounded off, giving the reader a feeling of completeness or conviction. What are the elements in the art of rounding off?

More specifically, the questions to be answered by the present survey were: (1) What percent of 1600 magazine articles were effectively concluded and what percent were not? (2) Are there any differences between research reports and other technical writing in these matters? (3) How does education compare with a few other fields of subject matter in these respects? (4) Is there much difference between periodicals within the field of education? (5) Are there some more effective devices and some less effective devices for concluding articles, or is it finesse in writing instead of devices which gives endings force and charm? (6) If there are devices, what is their relative frequency of successful and of unsuccessful use?

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*The writer acknowledges assistance by several graduate students in gathering and tabulating the data of this survey.

[1] J. R. Shannon, "Art in Writing for Educational Periodicals The Introduction," Journal of Educational Research, XLIV (April, 1951), pp. 599-610.

Procedure of Survey

Grossly stated, the procedure of the survey consisted of examining the 1600 articles, observing and weighing the characteristics in question, tabulating the results, and drawing conclusions. The details of procedure are shown in outline form as follows:

A. Selecting articles.
  1. Each student (or team of students) who helped judge the articles used a single periodical, usually in the field of his teaching major or other major interest, starting with current numbers and working backwards until he had covered 100 articles.
  2. Each article had to be written originally in English and be a full and complete article.
  3. Editorials, news items, book reviews, poems, organizational matters (as in NEA Journal), and straight bibliographies (as in the Phi Delta Kappan) were not included.
  4. Research reports had to be written by the researchers themselves.

B. Procedure of analysis.
  1. An ending was classified as effective or not effective, depending on whether a reader was thrilled, stirred, or impressed by it. This emotion must have resulted from the style of writing and not from the subject matter of the exposition. The style did not have to be repulsive or annoying to be classified as ineffective. Endings which were neutral in appeal were called ineffective. An effective ending is not like a joke which peters out before the climax is reached. It ends with a bang. An effective ending gives a consolation of completeness, a positive satisfaction or fascination, in addition to rounding off an exposition. It grabs the reader.
  2. Each article was scanned as a whole to determine

whether or not it was a research report.

3. Identifying and classifying devices.
    a. As a starter, some half dozen devices often used by the writer were adopted. Then, as the analysis progressed, other devices were found and added to the list until it reached eighteen. The eighteen, in the order of their appearance in Tables I and III of this report, are:
        (1) A summarizing sentence or sentences; a generalization resembling a proverb.
        (2) A recommendation or warning or a series of recommendations or warnings.
        (3) Some 1-2-3 conclusions (usually in a research report).
        (4) A striking sentence or sentences; a punch line.
        (5) A challenge or call for action.
        (6) Statement of outcome of a course of action or proposed course of action (not the conclusion of a research). (Resembling the "and they lived happily ever after" in a Mary J. Holmes novel.)
        (7) A quotation or maxim.
        (8) An indication of need for or a challenge for research or for more research or study, or for developing a project further, or for one's trying a suggested course of of action. (This differs from number 5 in that this is a challenge for one to learn more, whereas number 5 is a challenge for one to do something about what he al- has learned.)
        (9) A dilemma ending, or a question or series of questions.
        (10) An expression of hope.
        (11) Pointing out possible applications, implications, or explanations of a principle or of some research finding or plan of action.
        (12) A prediction or a series of predictions.
        (13) A statement of setting or of purpose or of principles underlying a project or course of action discussed in preceding exposition.
        (14) A story, example, or illustration.

- (15) The giving of instruction or instructions or of materials needed for the same.
- (16) An introduction to a bibliography (not the bibliography; bibliographies were never counted as parts of articles).
- (17) Pointing toward a forthcoming article or articles in a series.
- (18) A question of the validity of a writer's own data or conclusion or thesis.

b. Articles which were left dangling with no rounding off were classified as *no ending*, and they were automatically regarded as ineffective by definition.

c. If an ending was longer than one paragraph, it was classified on the basis of the last paragraph alone, if possible.

d. Several endings used more devices than one.[2] Several others were of such nature that their devices quite justifiably could be classified one way as well as another.[3] In such instance, the judge arbitrarily decided on a single device, being guided by what impressed him most. In case the judge was unable to introspect and decide on the bases of what impressed him most or of what was most dominant, he decided in favor of the device or phase of the ending which appeared last. It should be clear from this account, and from the two specimen endings shown in foot-notes 2 and 3, why there were so many instances in which the three judges evaluating an article disagreed among themselves in identifying devices.

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[2] Example: "Regardless of the questions these games may raise, are they not worth a try as we attempt to help boys and girls learn the values of cooperation in a too competitive world?" This ending, by Ruth Cornelius in *Child Education*, uses devices 5 and 9 unquestionably, and one might be justified in classifying it as 4 or 11.

[3] Example: "Wise authors and editors therefore work together from the very onset, with a clear mental picture of the typical finished page or perhaps with actual specimen pages before them. Samples of the results of such intelligent cooperation are in every superintendent's and principal's bookcase. Take them down, and dust them off, and look them over. You will be surprised." P. A. Knowlton, in these closing words in *The Clearing House*, employs what might be called devices 1, 5, 2, or 12. As a matter of fact, two of the three judges called it number 1 and one called it number 5.

C. Maintaining reliability and validity.
   1. Each student who participated in the evaluating was carefully coached in advance on how to proceed, and was supervised throughout by the writer of this report, thereby enhancing uniformity of decisions.
   2. Each set of 100 articles was evaluated by three different students, each working independently from the others. With only two options regarding research and two regarding effectiveness, there always were at least two out of three judges classifying an article alike as to research or not research and alike as to effectiveness or lack of effectiveness of its ending. As a matter of fact, there was unanimity of opinion four times out of five (79+ percent) in regard to research or not research. There was unanimity only one time in three (34+ percent) in regard to effectiveness versus ineffectiveness of endings, however. These are considerably higher percentages of unanimity of agreement than prevail among recent United States Supreme Court decisions.
   3. With a wider variety of options regarding devices employed in rounding off educational expositions, there was a lower degree of unanimity of agreement. The figure was only 12.5 percent. With another 46- percent of two-to-one decisions, the total was brought up to only 58+ percent of endings being definitely classified as employing a specific device.

A summary of the measures of reliability of the judgments of the sixteen three-man teams is shown in Table I. The table shows the median and the range of percentages of team agreement in regard to research or not research, effective or not effective endings, and devices employed in endings. Three ways, at the bottom of the table, represents cases in which no two members of a team classified the devices of endings the same way.

As might reasonably have been expected, the percentages of agreement as to whether articles were reports of researches or not, were higher than for the other team decisions. In regard to all factors evaluated, there was a wide range of degree of unanimity among the sixteen teams of judges. Like panels of jurors elsewhere, their degree of like-mindedness varied.

TABLE I

SUMMARY OF PERCENTAGES OF UNANIMITY OF AGREEMENT AMONG JUDGES

Characteristics Judged	Percentages of Unanimity of Agreement in Sixteen Periodicals		
	Median Percentages	Range of 'Percentages	
		High	Low
Research or not research (totals)	78	96	57
Research	53	100	0
Not research	83	96	50
Effective or not effective (totals)	32	67	18
Effective	25	45	0
Not effective	35	76	6
Devices in endings (totals)	11	30	6
1	7	60	0
2	50	100	0
3	0	100	0
4	13	23	0
5	25	100	0
6	17	100	0
7	0	17	0
8	0	0	0
9	25	100	0
10	0	50	0
11	0	33	0
12	0	50	0
13	0	100	0
14	0	33	0
15	0	50	0
16	0	100	0
17	0	20	0
18	0	50	0
No ending	25	53	0
Three ways	0	0	0

The more significant data of the survey are summarized in Tables II and III. Table II shows the number (and the percent) of articles in each periodical which were classified as researches or not researches, and the number (and percent) classified as having effective endings or ineffective ones. Table III shows the frequency and percentage of use of each of the eighteen devices for rounding off at the end, breaking the same down into research and not research, effective and not effective.

Conclusions

Some of the more significant and definite findings brought out by the tables are:

1. Articles in education have ineffective endings far more frequently than they have effective ones (638 to 362). The 600 other articles show the same general pattern but to a less extreme degree (350 to 250).
2. Wide differences exist between different educational periodicals in respect to their percentages of effective endings. Childhood Education and Clearing House each had over 60 percent effective, and School Executive had 55. On the other hand, California Journal of Elementary Education, Educational Administration and Supervision, Journal of Educational Research, and School Life each had fewer than 25 percent.
3. Magazines in other areas of interest also varied widely in percentages of their articles with well-written endings. Atlantic Monthly led all non-educational magazines surveyed for this feature, with over 60 percent. American Historical Review and House Beautiful each was in the 50's bracket. Elementary English and Journal of the American Association of Health, Physical Education, and Recreation each fell below 30. But none of the six non-educational periodicals fell so low in percentages of well-ended articles as did four of the educational ones.
4. Reports of researches were distinctly less effective in their endings than non-research articles. It is not inherent in research reports that they be less well written than other articles in their areas of interest, however. American Historical Review, which had a higher percentage of research reports than any other periodical analyzed (88), had 44 percent with effective endings and 44 percent with ineffective ones. Clearing House, perhaps the best-edited educational magazine, had only 14 research reports among its 100 articles, but 11 of the 14 had well-written endings, which was a higher proportion with effective endings than obtained among its larger number of non-research articles.

TABLE II

DISTRIBUTION OF ARTICLES BY FIELDS OF SUBJECT MATTER, PERIODICALS, AND CHARACTERISTICS OF ARTICLES

Fields of Subject Matter and Periodicals	Frequencies by Characteristics*								
	Research			Not Research			Totals		
	Ef've	Not Ef've	Totals	Ef've	Not Ef've	Totals	Ef've	Not Ef've	Totals
Education	47	141	188	315	497	812	362	638	1000
American School Board Journal	2	10	12	33	55	88	35	65	100
California Journal of Elementary Education	4	8	12	20	68	88	24	76	100
Childhood Education	2	-	2	62	36	98	64	36	100
Clearing House	11	3	14	54	32	86	65	35	100
Educational Administration and Supervision	5	17	22	10	68	78	15	85	100
Journal of Educational Research	10	65	75	1	24	25	11	89	100
NEA Journal	4	6	10	33	57	90	37	63	100
Phi Delta Kappan	3	10	13	33	54	87	36	64	100
School Executive	5	5	10	50	40	90	55	45	100
School Life	1	17	18	19	63	82	20	80	100
Current affairs									
Atlantic Monthly	5	4	9	59	32	91	64	36	100
English									
Elementary English	-	13	13	25	62	87	25	75	100
Health, physical education, and recreation									
Journal of the American Association of Health, Physical Education, and Recreation	3	6	9	24	67	91	27	73	100
History									
American Historical Review	44	44	88	9	3	12	53	47	100
Household arts									
House Beautiful	1	-	1	49	50	99	50	50	100
Mathematics									
The Mathematics Teacher	6	5	11	25	64	89	31	69	100

*Since 100 articles were examined in each periodical, the frequencies after names of periodicals are also percentages.

TABLE III

DISTRIBUTION OF DEVICES IN ENDINGS BY CHARACTERISTICS OF ARTICLES

Devices	Frequencies by Characteristics																	
	Research						Not Research						Totals					
	Effective		Not Effective		Totals		Effective		Not Effective		Totals		Effective		Not Effective		Totals	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1	15	14	33	15	48	15	50	10	91	12	141	11	65	11	124	13	189	12
2	9	8	5	2	14	4	31	6	52	7	83	6	40	7	57	6	97	6
3	8	8	38	18	46	14	11	2	16	2	27	2	19	3	54	5	73	5
4	5	5	1	-	6	2	51	10	10	1	61	5	56	9	11	1	67	4
5	3	3	1	-	4	1	34	7	22	3	56	4	37	6	23	2	60	4
6	4	4	9	4	13	4	21	4	24	3	45	4	25	4	33	3	58	4
7	7	7	5	2	12	4	21	4	15	2	36	3	28	5	20	2	48	3
8	4	4	17	8	21	7	7	1	16	2	23	2	11	2	33	3	44	3
9	1	1	2	1	3	1	20	4	11	1	31	2	21	3	13	1	34	2
10	2	2	1	-	3	1	9	2	21	3	30	2	11	2	22	2	33	2
11	1	1	6	3	7	2	5	1	18	2	23	2	6	1	24	2	30	2
12	3	3	3	1	6	2	7	1	16	2	23	2	10	2	19	2	29	2
13	1	1	3	1	4	1	2	-	7	1	9	1	3	-	10	1	13	1
14	-	-	1	-	1	-	5	1	7	1	12	1	5	1	8	1	13	1
15	1	1	1	-	2	1	2	-	7	1	9	1	3	-	8	1	11	1
16	-	-	1	-	1	-	2	-	7	1	9	1	2	-	8	1	10	1
17	-	-	1	-	1	-	2	-	3	-	5	-	2	-	4	-	6	-
18	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1	-	1	-
No ending	-	-	15	7	15	5	-	-	103	13	103	8	-	-	118	12	118	7
Three ways	42	40	69	32	111	35	226	45	329	42	555	43	268	44	398	40	666	42
Totals*	106	102	213	94	319	99	506	98	775	100	1281	100	612	100	988	98	1600	102

*The percentages recorded in these columns are to the nearest second place, and their sums, therefore, do not always equal 100. When the percentages are computed to five places, their sums equal 100 plus or minus 0 to 0.02.

5. Only seven of the eighteen devices for rounding off were identified by as many as two out of three judges as often as 48 times (an even 3 percent of the 1600), no device more than 12 percent, and only two devices more often than a full 5 percent. The top eight devices (the eighth was barely under 3 percent), in descending order of frequency, with an effective example of each, and the source of the example, are as follows:

a. A summarizing sentence or sentences.
"UNESCO walks slowly indeed but it is going toward a new freedom. It is going our way!" (George D. Stoddard, School Life)

b. A recommendation or warning.
"Most of all, young people need adults to be curious about them, not prejudiced, not opinionated. Curiosity breeds knowledge: if you get to wondering what makes them tick, and why they skip a beat now and then, you will stand a chance of understanding them better." (J. Roswell Gallagher, Atlantic Monthly)

c. Some 1-2-3 conclusions.
"In light of the facts which have been examined, the following conclusions may be drawn:

"1. For some children, school gives rise to conditions which increase the likelihood they may get into trouble. In certain instances, there are built up feelings which produce destructive aggression, as in malicious destruction of property. More often, however, the outcome is less directly connected, and appears in the form of burglary, robbery and other forms of theft.

"The exact way in which school life impinges upon these personalities cannot be traced in detail as yet. However, the fact that it has such an effect should provide an incentive for educators to seek appropriate modifications in school procedures. This is a field in which carefully conducted experiments are needed.

"2. Under conditions prevailing in the United States at present, schools prevent many youngsters from falling into delinquency patterns. This is indicated by the well-nigh universal increase in August rates and by the correlations between delinquency rates and length of school term. Without the stabilizing influence of school routines, some children appear to find that leisure, unorganized and undirected, is a frustrating experience." (William W. Wattenberg, Journal of Educational Research)

d. A striking sentence or punch line.
"The first-grade teacher has a great advantage over most humans. She can enjoy her childhood when she is old enough to enjoy it." (Dorothy Bogan, *Childhood Education*)

e. A challenge or call for action.
"Have we the vision? Can we be stirred from our usual way of doing the daily tasks? Do we care enough about children to call forth the extra energy to move an all-for-one and one-for-all community into high gear? We must do no less!" (Rae Lee Morris, *School Life*)

f. Statement of outcome of a course of action.
"The students knew that Aunt Melinda had not gone to school a day in her life, but had been taught to read and write by the little white children that she had nursed and by her preacher-husband. Yet they agreed that this letter was far more interesting than letters that were correctly written. So they made an effort to combine good grammar and warm-hearted simplicity, and they wrote the best letter that I had received from the English classes." (Ruby Wagner, *Elementary English*)

g. A quotation or maxim.
"For it is as true today as it was yesterday, and as it will be tomorrow, that a thing of beauty is a joy forever, even if it is only a watering pot." (Agnes Rothery, *House Beautiful*)

h. An indication of a need for or a challenge for more research or study.
"Education must search constantly for new and effective methods of presentation if it is to answer the ever growing demands of its students. Perhaps here is a solution. Certainly, it is worth trying! (Ralph V. Horning, *Educational Administration and Supervision*)

6. Non-research articles outnumbered research reports by more than four to one, and all devices for endings with a total frequency of more than one percent were employed for both research reports and other articles, and were judged to be effective in some applications and ineffective in others. Of the twelve devices which were applied more than 16 times in the 1600 articles, only five were used in non-research articles in preference to research reports in lopsided proportions of more than four to one. The five were: *recommendations or warnings*, *striking sentences or punch lines*, *challenges or calls for action*, *questions or dilemma endings*, and *expressions of hope*. Of these five, the first and last were used effectively much

less frequently than ineffectively in non-research articles. Therefore, only three devices can be said to have demonstrated superiority for rounding off non-research articles. They are: striking sentences or punch lines, challenges or calls for action, and questions or dilemma endings. Incidentally, there probably is no reason why the same effective devices could not be used for rounding off research reports as well as for other bits of expository writing.

Only one of the top twelve devices was used more often for research reports than for other articles (some 1-2-3 conclusions), and only one other was used approximately as frequently (indication of need for more research). Each of these types of endings was used effectively in research reports much less often than ineffectively. Therefore, no device for rounding off expositions can be called particularly suitable for research reports.

7. The total frequency of effective endings was less than two-thirds that of ineffective ones. Only four devices were used in the 1600 articles appreciably more times effectively than ineffectively. They were: striking sentences or punch lines, challenges or calls for action, quotations or maxims, and questions or dilemma endings. None of these four was used with notable success or frequency in research reports. The most commonly used ending in both research reports and other articles was summarizing sentences, but it was used many more times ineffectively than effectively in both types of expositions. On the whole, therefore, it seems that finesse in writing is more potent than devices for effectively rounding off expositions.

Implications, Applications, and Recommendations

Many educationists, more than some other scholars, do not know how to write, and those who report researches are worse than the rest. Their popular reputation for being dull in the art of communication is warranted by discriminating surveys.

No scholar has a professional or a moral right to be cumbersome and dull in his discourse. Artless writing does an injustice to the writer, to his work, to his profession, to research, and to his readers. Contrary to apparently popular belief, dullness is not a sign of scholarship; it is a mark of either ignorance, negligence, or boorishness. Scholars should fight it like they would lice.

Why are writers remiss in this respect? Are they dense, or do they simply not try? No psychologist would say that it is intellectual incompetence which prohibits their closer approach to perfection. If an educationist has the intelligence and scholarship to enable him to have an idea worth writing, he has the intelligence and can acquire the scholarship requisite for writing it well. It is a matter of self-motivation. Educationists long have preached about the importance of motivation—and they practice what they preach: they prove their point by their own malpractice of the art of writing.

THE VOCATIONAL INTERESTS OF NURSES AND NURSING STUDENTS

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Introduction

AT THE PRESENT TIME the demand for professionally trained nurses far exceeds the supply and indications are that this situation is not likely to improve for some time to come. In view of this fact, it becomes apparent that the lack of numbers must be compensated for by better quality, and that limited training facilities must be used as efficiently as possible. To accomplish these objectives it is necessary to discover factors related to success in nursing and utilize objective devices for determining their presence or absence in the prospective student. The failure of achievement tests in student selection shows that success in nursing is not synonymous with ability to complete the requirements of the curriculum in a school of nursing. Success in the nursing school is a necessary but not sufficient requirement for success in the practice of nursing. Acceptance of this fact has led to attempts to discover non-academic factors related to success in the field.

The Problem

This paper reports the first step in a study designed to trace the development of nursing students' vocational interests from their entrance into the nursing school through their graduation, and to compare their interest profiles with those of graduate nurses. The Kuder Preference Record, Form C, was administered to 78 graduate nurses representing the various fields of nursing, 67 freshmen students enrolled in hospital schools of nursing, and 115 freshmen students in both degree and diploma programs in collegiate schools of nursing in an attempt to answer the following questions:

1. In what interest areas are graduate nurses and nursing students significantly high or low as compared to the Kuder norms for women?
2. How do the interest scores of graduate nurses differ from those of nursing students?

3. How do students in hospital schools of nursing compare in their interests with students in collegiate schools of nursing?

Previous Studies

A review of the literature reveals a number of studies that have aimed at learning more about the interests of nurses and nursing students. Direct comparisons between beginning students and graduate nurses have not been made, however, and there is little research directed towards tracing the development of the interest in nursing or determining whether the interest of nursing students as measured by current instruments are of value in predicting success in the field. McLean (3) recommended the inclusion of an interest test in any battery of tests for the selection of nursing students. Potts (5) in writing in 1941 stated that the majority of interest tests have not proved useful but felt that with careful administration and interpretation they may have some value in guidance of students. She suggested that experimental work in interest tests may be a worthwhile undertaking.

Berg (1) included the Kuder Preference Record in a battery of tests given to 110 students, 74 of whom were successful in completing the three year course, 36 dropping out before the end of that time. Fifteen of the 36 dropped out because they did not like nursing. The 15 who dropped out scored higher in mechanical interests and slightly higher in interest in the scientific field than those who remained in the school. Commins (2) studied the interest patterns of 126 nursing students in three hospital schools by means of the Cleeton Vocational Inventory test and found that their scores indicated high interest in nursing. Miles (4) studied 78 nursing students and 64 graduate nurses with reference to activities and occupation, intellectual interest and output, emotional attitudes and expressions. She found that the nursing students as a group were active, sought interesting and varied types of work, usually liked vigorous play and creative adventure. The graduate nurses as a group had less wide interests in matters outside their field as compared with other women of the same age and with equal education. She stated that personality and interest ratings were the least satisfactory measures at that time.

The Research Department of the American Nurses' Association (8) gave the Kuder Preference Record test to 846 graduate nurses representing the fields of private duty, public health, supervision and head-nursing, and nursing education, and set up profiles for each field represented. Triggs (9) made a similar study and concluded that the average nurse as compared with women in general is inarticulate with high measured interest in social service, low measured interest along literary and verbal lines; and occasionally high interest in scientific fields.

Findings

The findings of the present study can best be seen by examining Chart I and Table I. In Chart I the interest profiles of the graduate nurse group and the two nursing student groups are compared with Kuder's base group of 1429 women. (6) It may be seen that the three nursing groups are very similar, with all three groups high in science and social service interests and low in clerical interest as compared with the base group. Kuder considers interests above the 75th percentile and below the 25th percentile as particularly important. All group were above the 75th percentile in social service interests, with the graduate nurses and college nursing students well above the hospital nursing students. The graduate nurse group average is at the 77th percentile in scientific interest, with the student groups slightly below the 75th percentile in this area. The hospital nursing school students were also high in outdoor interest, their average score being at the 77th percentile. All three groups were below the 25th percentile in clerical interest.

Comparison of the mean interest scores and standard deviations of the three nursing groups in Table I reveals some significant differences. Students from collegiate nursing schools are significantly lower than the other two groups in mechanical interest, and students from hospital schools are significantly below the other groups in social service interest. These differences, although statistically significant, are small. There are no important differences in variability of scores among the three groups.

Summary

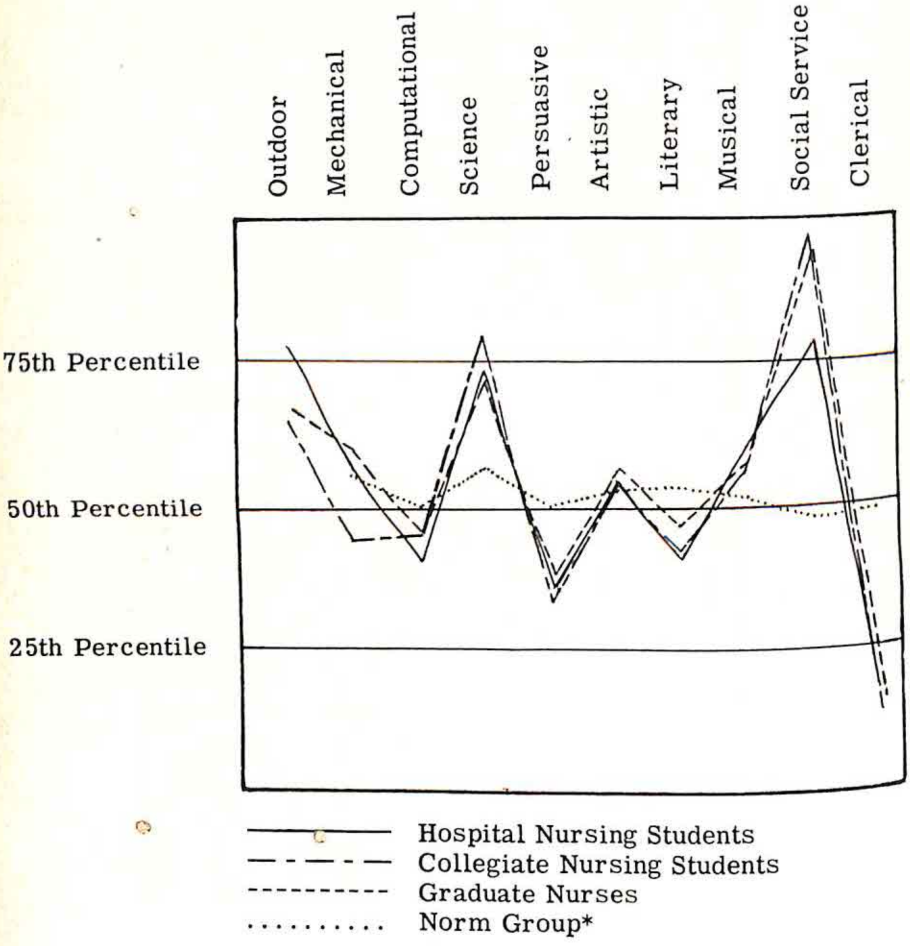
Graduate nurses and nursing students in this study were found to have high scores in social service and scientific interests and low scores in clercial interest as compared with women in general. There were statistically significant differences in the mean interest patterns of graduate nurses, students in hospital nursing schools, and students in collegiate nursing schools, but these difference were small.

Conclusions

Since the students had all been in the school less than three months it is unlikely that their interests are due to training, but may reflect an attempt on the part of nursing school students to fit the pattern they consider desirable for nurses. How these interests are related

CHART I

MEAN PERCENTILE RANKS OF THE THREE NURSING GROUPS AS COMPARED WITH KUDER'S BASE GROUP



*Percentiles transmuted from form B scores given in the Revised Manual for the Kuder Preference Record, page 12.

TABLE I

MEANS, STANDARD DEVIATIONS, AND PERCENTILE RANKS OF THE NURSING GROUPS STUDIED ON THE KUDER PREFERENCE RECORD

		0 OUT	1 MEC	2 COM	3 SCI	4 PER	5 ART	6 LIT	7 MUS	8 SOC	9 CLE
Graduate Nurses N = 78	M	40.38	28.01	21.43	38.58	31.32	28.11	19.62	16.08	63.32	41.53
	σ	11.85	8.01	11.07	11.69	10.15	8.05	6.83	13.17	11.70	12.15
	Percentile rank	67*	60	44	71	34	57	47	57	87	18
Hospital Nursing Students N = 67	M	43.82	27.70	20.19	39.19	30.70	27.62	18.22	16.71	58.65	42.80
	σ	13.50	9.29	8.07	11.45	9.92	8.67	6.78	7.07	12.67	11.25
	Percentile rank	77	60	38	73	32	55	40	62	77	19
Collegiate Nursing Students N = 115	M	40	23.71	20.17	41.41	30.69	27.84	18.65	16.15	63.99	40.34
	σ	12.42	9.37	8.35	9.95	8.05	9.12	7.41	6.19	10.05	13.13
	Percentile rank	66	43	39	77	32	56	41	57	88	16

*Percentiles computed from the Self-Interpreting Profile Sheet for the Kuder Preference Record-Vocational, Form C.

to success in the school can partially be demonstrated by studying and comparing the interest patterns of those who drop out with those who successfully complete the course. The authors plan to follow the nursing students through the three year period in the schools to see whether or not their interest patterns change and how their interests are related to their success in the school, and later in the field. A comparison of the interest patterns of successful graduate nurses with those who are not successful would also be desirable if a satisfactory criterion for success could be established.

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RELATION BETWEEN GROSS SCORES ON THE A.C.E. AND ACADEMIC SUCCESS*

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Introduction

STUDIES CARRIED on by numerous investigators under a wide variety of conditions have adequately demonstrated that the functions measured by the intelligence tests now available show only a moderate relationship to academic achievement. Nevertheless, these intelligence tests are one of our major criteria for predicting the probable academic success of entering college students and are used extensively in college entrance examination batteries. After analyzing numerous reports and articles, Garrett[1] concluded that the American Council Psychological Examination, of all the tests in popular use, yielded the highest correlation with college marks.

The validity of aptitude or intelligence scores as criteria for the selection of college students has been amply tested by many investigations concerned with probationary students or withdrawals. Coffey[2] and Eurich[3] reported that there was a general tendency for probationar students and withdrawals to rank lower than average on the college aptitude tests. The results of studies by Eaton,[4] Stalnaker,[5] Lanigan,[6]

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*Adapted from Lawrence M. DeRidder, *Selected Factors Related to the Academic Achievement of Probationary Students Graduated in 1948 from the College of Literature, Science, and the Arts of the University of Michigan.* An unpublished doctoral dissertation. University of Michigan, 1950.

[1] Harley F. Garrett, *A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Sciences and Teachers Colleges.* An unpublished doctoral dissertation. University of Colorado, 1948, p. 247.

[2] Walter C. Coffey, Jr., "The Mortality and Academic Careers of Two Groups of College Students," *School and Society*, LII (September 28, 1940), p. 269.

[3] Alvin C. Eurich, "College Failures," *School and Society*, XXXVIII (May 27, 1933), p. 696.

[4] Merrill T. Eaton, "A Study of Indiana University Withdrawals," *Indiana University School of Education Bulletin*, XVIII (May, 1942), p. 11.

and Berg, Larsen, and Gilbert,[7] using the American Council Psychological Examination as the predicting instrument, emphasized that low scores on this examination indicated poor scholastic ability and probable failure in college. It was pointed out that withdrawals made scores far below those of the student body as a whole. Berg, Larsen, and Gilbert, in addition, demonstrated in their study that students who fell below the raw score of 90 were almost certain to fail or receive low marks.

Not all the investigators using the A. C. E. concluded that this test could be used to predict scholarship with a high degree of accuracy. Although Olson[8] agreed that the probationary group as a whole scored low on intelligence tests, he reiterated that academic failure occurred at all levels. Lanigan,[9] on the basis of her results, stressed that the use of the A. C. E. alone was not a reliable means of predicting success in college. Further accenting Lanigan's conclusion, Clark[10] found that college aptitude tests differentiated only moderately well between successful and unsuccessful students. Young,[11] too, acknowledged that failure to attain satisfactory grades occurred almost equally in students of high and low intelligence.

The Problem

It is the purpose of the present study, part of a comprehensive in-

[5] Elizabeth M. Stalnaker, "A Four Year Study of the Freshman Class of 1935 at the West Virginia University," Journal of Educational Research, XXXIX (October, 1945), p. 101

[6] Mary A. Lanigan, "The Effectiveness of the Otis, the A.C.E., and the Minnesota Speed of Reading Tests for Predicting Success in College," Journal of Educational Research, XLI (December, 1947), p. 295.

[7] Irwin A. Berg, Robert P. Larsen, and William M. Gilbert, "Scholastic Achievement of Students Entering College from Lowest Quarter of Their High School Graduating Classes," American Association of Collegiate Registrars Journal, XX (October, 1944), p. 54.

[8] Willard C. Olson, A Personnel Study of Students in the College of Education of the University of Minnesota (Minneapolis, Minnesota: University of Minnesota, 1929), p. 58.

[9] Lanigan, op. cit., p. 293.

[10] Kenneth E. Clark, "Student Selection and Student Survival in the College of Science, Literature, and the Arts," Biennial Report of the Committee on Educational Research: Studies in Higher Education (Minneapolis, Minnesota: University of Minnesota Press, 1943), p. 75.

[11] J. Bateman Young, "How Emotional Traits Predispose to College Failures," Journal of Educational Psychology, XVIII (December, 1927), p. 633.

vestigation of factors related to academic achievement, to examin
relationship which exists between the A. C. E. and the scholastic a
ment of two groups of students who entered the College of Literatu
Science, and the Arts at the University of Michigan as freshmen.
obtain the groups used in this study, two different selective criter
were used. First, the transcripts of the 1,071 students who gradu
from the College of Literature, Science, and the Arts in June, 19
were examined. Of these graduates, 212 students, or 20 percent,
found who had incurred academic probation at some time during th
residence at Michigan and had sufficiently raised their average to
duate. An equal number of non-probationary students was then se
ted, randomly chosen according to sex, from the same graduating
class. From the probationary and non-probationary groups thus f
ed, those students who had entered the University as freshmen (na
were selected for this study.

The criterion for determining the academic survival of students
the College of Literature, Science, and the Arts was grades. Des
their variability and doubtful validity, grades represented college
cess, as the term is usually understood, and provided easily acce
ble objective data which readily lent themselves to statistical proc
dures.

Since the authors of the A. C. E. have so constructed the variou
test editions since 1940 as to make the gross scores directly comp
able, the total raw scores, rather than the percentiles or their su
scores, L and Q, were used. These scores were then halved and
rounded off to the nearest even number for coding purposes.

Analysis of Data

The principal problem of this investigation was to determine wh
ther differences in college aptitude actually did exist between the p
bationary and the non-probationary students as shown by the obtain
data. The Fisher *t* statistic was used to test the significance of th
differences between the mean scores.

In Tables I and II the distribution of the halved gross scores for
probationary and non-probationary students is shown. The differ
ences between the means of the scores for both men and women ar
highly significant and indicate that there is less than one chance in
hundred that such differences could be the result of chance in samp
Closer examination of the two tables reveals other interesting fact
There is greater disparity between the means of the scores of the
than of the women, the scores of the non-probationary men being h
er and those of the probationary men lower than the comparable sc
of women.

TABLE I

HALVED GROSS SCORES OF NATIVE PROBATIONARY AND NON-PROBATIONARY MEN ON THE AMERICAN COUNCIL PSYCHOLOGICAL EXAMINATION

Gross Scores (Halved)	Men		Gross Scores (Halved)	Men	
	Pro.	Non-pro.		Pro.	Non-pro.
38	1	0	62	3	3
39	0	0	63	2	0
40	1	0	64	3	4
41	0	0	65	3	2
42	1	0	66	1	2
43	1	0	67	1	2
44	1	0	68	6	3
45	1	0	69	0	2
46	4	0	70	0	2
47	1	0	71	0	1
48	2	0	72	2	4
49	0	0	73	2	0
50	1	0	74	0	2
51	1	1	75	0	0
52	9	2	76	0	0
53	2	0	77	0	0
54	7	1	78	2	2
55	0	0	79	0	1
56	3	3	80	0	0
57	0	0	81	0	1
58	2	0			
59	0	0	Number of cases	69	42
60	4	3	Mean of halved gross scores	57.45	65.74
61	2	1			
			Fisher t = 4.90*		

*Significant at the .1 percent level.

TABLE II

HALVED GROSS SCORES OF NATIVE PROBATIONARY AND NON-PROBATIONARY WOMEN ON THE AMERICAN COUNCIL PSYCHOLOGICAL EXAMINATION

Gross Scores (Halved)	Women		Gross Scores (Halved)	Women	
	Pro.	Non-pro.		Pro.	Non-pro
41	1	1	65	1	4
42	1	1	66	7	4
43	0	0	67	0	0
44	2	0	68	3	3
45	0	0	69	2	1
46	1	1	70	0	1
47	1	0	71	1	0
48	2	1	72	2	1
49	2	0	73	0	0
50	1	1	74	0	3
51	0	0	75	0	1
52	4	1	76	1	3
53	0	2	77	0	1
54	0	0	78	0	1
55	0	1	79	0	1
56	6	1	80	0	0
57	1	1	81	0	0
58	4	4	82	0	1
59	3	0	83	0	0
60	5	4	84	0	1
61	3	2	Number of cases	58	56
62	2	2	Mean of halved gross scores	58.90	64.0
63	0	1			
64	2	6			

Fisher t = 3.07*

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*Significant at the 1 percent level.

Conclusion

While it can be concluded that performance on the American Council Psychological Examination appears somewhat predictive of college survival and that probationary men in general score lower than any other group, it is nonetheless apparent that low scores by themselves do not insure academic failure nor high scores academic success. The range of scores for the groups overlaps considerably. Clark's[12] and Young's[13] assertion that results of aptitude tests differentiate only moderately well between successful and unsuccessful students is consequently substantiated.

All of the students included in the study were able to graduate, i. e., achieved academic respectability. It would appear, then, that errors in prediction might, as Munroe[14] has previously indicated, be attributed to the personal-social-emotional adjustment of the individual. The 20 percent who incurred sufficiently serious scholastic difficulty to be subjected to academic discipline apparently also had the intellectual ability necessary to meet the graduation requirements. They why of their academic difficulties and the how of their success in beyond the scope of this study. It may be, however, that a combination of more personal counseling, more survey courses, more courses in reading and study skills and longer probationary periods would have spared the many who did not graduate the ignominy of failure.

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[12] Clark, op. cit., p. 75.

[13] Young, op. cit., p. 633.

[14] Ruth L. Munroe, Prediction of the Adjustment and Academic Performance of College Students. Applied Psychology Monographs, No. 7 (Palo Alto, California: Stanford University Press, 1945), p. 55.

THE EFFECTIVENESS OF GUIDANCE CENTER COUNSELING

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IN THE PAST FEW YEARS several varieties of follow-up studies have been performed to help determine the effectiveness of counseling. (1, 2, 3, 5) Since the inception of the Veterans Vocational Rehabilitation program there has been an increased awareness of the importance of determining the effectiveness of counseling in the Veterans Administration program as well as in other educational counseling programs.

The purpose of the present follow-up study is to determine the effectiveness of counseling by the Highland Park Guidance Center with Highland Park Veterans Institute and Junior College students. This was done by comparing the students' progress prior to advisement with progress achieved in the training program selected by the student within 6 to 22 months following advisement. A longer period of follow-up could not, of course, be obtained because of the limited time that the Center has been under the auspices of the Highland Park Board of Education.[1] The sample used was only those students from Highland Park Veterans Institute and Junior College who received counseling from Highland Park Guidance Center Appraisers. These cases appeared for advisement at their own request or as a result of unsatisfactory progress.

155 cases of the total group counseled were used. Follow-up data

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[1] The Appraisers of the Highland Park Guidance Center were originally under the jurisdiction of the Veterans Administration. Since April, 1948, a new group of Appraisers was hired by the Highland Park Board of Education for the purpose of furnishing advisement and guidance to veterans under a Veterans Administration contract. The sample of this study includes only Highland Park Junior College students and students in the Highland Park Veterans Institute who were counseled by the new Appraisers. The cases counseled after February 10, 1950, were not included in this study since follow-up material was not available.

were obtained from the school record offices for 95 of the cases. Of the remaining number, data for 52 of the cases were obtained by phone and data for 8 were obtained by mail.

22 cases of the total group counseled were not used. One of the cases was deceased and follow-up material for the remaining 21 could not be obtained by phone, mail or school records.

Information concerning each of the cases in this study included:

1. Curriculum before advisement, and progress.
2. Recommendations of adviser.
3. Curriculum or alternative selected by student, and progress.

The progress of the students was tabulated as Satisfactory or Unsatisfactory. Satisfactory progress was defined as a "C" average for the work accomplished.[2] Unsatisfactory work was any grade lower than a "C." In some Terminal courses the marks received were "E" (Excellent), "S" (Satisfactory), and "U" (Unsatisfactory). In these cases "E" and "S" were considered "satisfactory" progress.

Whenever the recommended objectives included a degree program, the objectives were converted into the corresponding college curriculums. This was done in order to facilitate categorization of degree objectives. Other than college programs were categorized under Terminal training,[3] On-the-job-training,[4] and Employment.[5] Information could not be obtained as to whether the counselee was doing satisfactory or unsatisfactory work in On-the-job-training and Employment. Grading for On-the-job-training was not consistent and therefore could not be used in this study. For the cases that entered employment there was also no grading or rating system used to determine success in this area.

Procedure of Advisement. The procedure of advisement followed by the counselors of this Center was based upon the policy of the Veterans Administration outlined in the Manual of Advisement and Gui-

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[2] In the case of pre-medical and pre-dental students, satisfactory progress was at least a "B-" scholastic average. This was done because of the crowded conditions in medical schools and their insistence upon the "higher caliber" student.

[3] This category included objectives where non-degree training was required.

[4] When an individual was trained for an objective while working "on-the-job," such as an apprenticeship, it was considered On-the-job-training.

[5] When a job was being held that did not require a training program, it was considered Employment.

dance. (4) Briefly, the advisement procedure consists of: (1) a preliminary interview in which the counselor obtains information regarding the claimant's background, (2) psychological testing, and (3) counseling. When the testing is completed, the counselee returns to the adviser who then proceeds with the counseling which includes an interpretation of test results, an evaluation of test results as related to training programs, and presentation of pertinent occupational information. The selection of an objective is based upon the counselee's ability to gain insight into his abilities, background, interests, personality factors, and disabilities (if any) as they relate to a vocational objective.

Table I shows the distribution of students in appropriate categories. It is divided into two parts showing the distribution of those students following the recommendations of advisement and those students that did not follow the recommendations of advisement.

Ninety-four of the cases, out of the 104 who followed recommendations of advisement, followed College or Terminal courses. The remaining ten cases out of the 104 followed On-the-job-training and Employment. The subsequent breakdown of progress of the 94 cases indicates that 67, or 71.3% of the 94, had satisfactory progress, that is, they either went from Unsatisfactory to Satisfactory or they continued to do Satisfactory work. Twenty-seven of the 94 cases, or 28.7%, either continued to do Unsatisfactory work or went from Satisfactory to Unsatisfactory.

Twenty-three of the cases, out of the 51 who did not follow our recommendation, went into On-the-job-training or Employment. Since the majority of these cases pursued Employment, in which there is rarely a training program required, it seems difficult to evaluate this as successful "self-counseling" on the part of these individuals. It further seems that they would be using a minimum of their skills to advantage in the category we have defined as Employment. Possibly, the factor most likely to be the cause of these cases entering Employment is an economic one. This factor was either not mentioned by the counselee at the time of advisement, in order that it might be properly considered by the counselor, or it became an outstanding factor, in these cases, *after* advisement.

Summary and Conclusions

1. 67.1% of the total sample followed the recommendations of Advisement.
2. 32.9% of the total sample did not follow the recommendations of Advisement.
3. 71.3% of the students who followed recommendations in college and terminal institutions received *Satisfactory* grades after Advisement.

TABLE I

PROGRESS BEFORE AND AFTER ADVISEMENT

Cases	Satisfactory Progress		Unsatisfactory Progress			Total	
	U-S	S-S	S-U	U-U			
I. Students following the recommendations of advisement:							
A. Those cases in college:							
1. Students changing courses	10	11	3	4	28		
2. Students continuing in same course	15	21	4	10	50		
B. Students entering Terminal training	7	3	3	3	16		
	32	35	10	17		94	
C. Students entering On-the-job-training					6		
D. Students entering Employment					4	10	104
II. Students not following recommendations of advisement:							
A. Those cases remaining in college:							
1. Students not changing courses as recommended	2	3	0	8	13		
2. Students continuing in college after advised to leave	2	3	3	6	14		
B. Students entering Terminal training	1				1		
	5	6	3	14		28	
C. Students entering On-the-job-training					2		
D. Students entering Employment					21	23	51
Total Sample							155

*U-S Unsatisfactory before advisement; satisfactory after advisement
S-S Satisfactory before advisement; satisfactory after advisement
S-U Satisfactory before advisement; unsatisfactory after advisement
U-U Unsatisfactory before advisement; unsatisfactory after advisement

4. 60.7% of the students who did not follow the recommendations in college and terminal institutions did not receive Satisfactory grades after Advisement.
5. 28.7% of the students who follwed the recommendations in college and terminal institutions received Unsatisfactory grades after Advisement.
6. 39.3% of the students who did not follow the recommendations in college and terminal institutions received Satisfactory grades after Advisement.

The conclusion drawn from this study is that advisement has generally been successful in assisting students in selecting educational or vocational programs which can be pursued by them with satisfactory progress.

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BUSINESS USES OF MENTAL ARITHMETIC IN ELLENSBURG, WASHINGTON

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Introduction

EMPHASIS ON mental arithmetic has vacillated considerably during the nineteenth and twentieth centuries. Prior to 1821, mental arithmetic had little or no status in the curriculum. From 1821 until the early years of the 1900's mental arithmetic maintained a status in our schools that was equal to, if not greater than written arithmetic. From the early 1900's to the present, mental arithmetic practically disappeared from the curriculum.[1] However, a movement has been started recently, which is gaining impetus at present, to reestablish in the curriculum mental arithmetic with an emphasis upon making it meaningful.[2]

A vital issue in this field has been of long standing interest to the writer. What uses are made of mental arithmetic in life outside the school? The present study was concerned with a segment of this large problem.

Definition of Terms

In the literature which deals with the teaching of arithmetic there was disagreement among authors concerning the terminology used to identify arithmetic problems to be solved without the use of pencil and paper or mechanical computing devices.

Some authorities chose to use the term "mental arithmetic" only; some used the term "oral arithmetic" only; some made a distinction between "oral arithmetic" and "mental arithmetic;" while others used the term "mental arithmetic" and "oral arithmetic" synonomously.

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*An abstract of Field Study No. 1 submitted in partial fulfilment of the requirements for the degree of Doctor of Education at Colorado State College of Education, Greeley, Colorado, 1951.

1. Catherine Stern, Children Discover Arithmetic (New York: Harper and Brothers, 1949), p. xxiii.
2. Gertrude H. Hildreth, Learning the Three R's (Minneapolis; Minnesota: Educational Publishers, Incorporated, 1947), p. 750.

Despite the fact that, from one point of view, all arithmetic is mental, the term "mental arithmetic" was used in this study to designate problems solved without the use of pencil and paper. Webster's New International Dictionary for 1947 defined "mental arithmetic" as the "Solution of arithmetic problems by mental processes, unassisted by written figures."[3] The term "oral arithmetic" was not recognized by this dictionary. Good defined "mental arithmetic" as "Arithmetic calculations performed mentally without pencil and paper."[4] The Education Index[5] contains an inverted subheading under the topic of arithmetic entitled, "Arithmetic, Mental." It does not include an inverted subheading entitled "Arithmetic, Oral." This is also true of the United States Library of Congress classification.

Therefore, the expression "mental arithmetic," as used by the writer, included arithmetic (1) problems which arose in an (a) oral manner, (b) written, or (c) "in the head" of the person who needed to solve the problem; (2) problems in which pencil and paper and other mechanical devices such as calculators were not used to record the intermediate steps between the statement of the problem and its answer; and (3) problems in which pencil and paper were used, and problems in which they were not used to record the answer.

Purposes of the Investigation

The main purpose of this investigation was to ascertain the uses made by business people of mental arithmetic during the conduct of one day's business affairs in the City of Ellensburg, Washington.

In accomplishing the main purpose the writer secured information concerning the following:

A. The extent to which arithmetic problems were solved mentally

   1. Percent of arithmetic problems solved entirely mentally
   2. Percent of arithmetic problems solved with a combination of mental and written arithmetic.

B. The nature of the problems which were solved mentally

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[3] W. A. Neilson, Ed., Webster's New International Dictionar (Unabridged (Springfield, Massachusetts: G. and C. Merria Company, 1947), p. 1536.

[4] C. V. Good, Dictionary of Education (New York: McGraw-Hill Book Company, 1945), p. 29.

[5] D. R. Carpenter and Margaret Furlong, The Education Inde (New York: The H. W. Wilson Company, 1949).

1. Percent of mental arithmetic that involved money
2. Percent of mental arithmetic that involved whole numbers only
3. Percent of mental arithmetic that involved fractions or mixed numbers
4. Percent of mental arithmetic that involved decimals, other than money or percentage
5. Percent of mental arithmetic that involved percentage
6. Uses that were made of the four fundamental processes
7. Size of the numbers used in solving arithmetic problems mentally
8. Number of steps involved in solving arithmetic problems mentally

C. The methods used in solving arithmetic problems mentally

1. Approximations used in solving arithmetic problems mentally
2. Short cuts used in solving arithmetic problems mentally

Procedures

These purposes were accomplished by interviewing one hundred twenty-six business men and women engaged in one hundred twenty-four businesses representing sixty-two occupations in Ellensburg, Washington. All interviews were conducted by the investigator with the aid of a check list. The investigator felt that it would be impossible to secure from these persons an exact tabulation of the arithmetic problems which they had solved mentally during one day's business affairs. This study was, therefore, based upon approximations to the closest multiple of ten on a scale of zero to one hundred percent.

The business men's and women's responses to the seventeen questions stated on the check list constituted the data for this study. The findings were treated in tabular and narrative form.

Conclusions and Recommendations

The mean of percentages of one day's arithmetic problems which were solved entirely mentally by business men and women was 40.20. A combination of mental and written arithmetic was used to a less extent (the mean of percentages was 24.73), than either mental or written arithmetic was used separately. The extent of mental arithmetic used was often contingent upon one or more of the following five factors: (1) the size of the business; (2) the nature of the business; (3) the number of times the same or similar arithmetic problems occurred;

4) the position held by the person, either as manager or clerk; and (5) the ability and inclination of the persons to solve arithmetic problems mentally.

Mechanical computing devices have not replaced the need for mental arithmetic, especially in small businesses. The implication for the arithmetic curriculum is: Arithmetic problems to be solved mentally should be included in the curriculum and the pupil should be taught to solve those problems through sensible use of number relationships.

About nine-tenths of the persons interviewed reported that the arithmetic problems which they solved mentally involved whole numbers and money 80 to 100 percent of the time. The mean of percentages of arithmetic problems which were solved mentally that involved whole numbers and money was 88. 57 and 87. 41 respectively. The obvious implication is that most of the mental arithmetic problems which are included in the curriculum should make use of whole numbers and money.

More than nine-tenths of the persons used fractions and mixed numbers, and decimals, other than money or percentage, only 10 percent, or less, of the time. The mean of percentages of arithmetic problems which were solved mentally that involved fractions and mixed numbers, and decimals was 7. 59 and 4. 02 respectively. Therefore, there is less need for solving mentally those arithmetic problems which involve these items.

The mean of percentages of arithmetic problems which were solved mentally that involved percentage was 26. 21. These data seem to justify in our secondary schools the inclusion of arithmetic problems to be solved mentally that involve percentage.

When solving arithmetic problems mentally, the rank order of use of the four fundamental operations, as determined by the percent of the persons who used the process most and next to the most, was as follows: (1) addition, 99. 11 percent; (2) multiplication, 81. 25 percent; (3) subtraction, 16. 07 percent; and (4) division, 2. 68 percent. The implications for the arithmetic curriculum concerning the frequency of use of the four fundamental operations are as follows: (1) addition and multiplication are needed most; (2) subtraction is needed to a less extent than either addition or multiplication; and (3) division is needed least of all the processes in solving problems mentally.

Two of every three persons interviewed (64. 29 percent), responded that the size of most of the numbers they used were under 100. The largest numbers used, as reported by 55. 36 percent of the persons, contained three digits. The implications for teachers should be apparent; most of the numbers contained in arithmetic problems to be solved mentally should be small numbers.

Most arithmetic problems solved mentally were simple one-step problems. The rank order of the steps as determined by the means of percentages of their uses was as follows: (1) one-step problems, 79.55; (2) two-step problems, 16.96; (3) three-step problems, 1.96; and (4) more than three-steps, .00. The implications for the arithmetic curriculum are as follows: (1) most of the problems to be solved mentally should require only one-step for their solution; (2) practice in solving two-step problems should be given occasionally; and (3) practice in solving problems containing three or more steps needs little, if any, emphasis.

The mean of percentages of arithmetic problems which were solved mentally that involved approximations was 38.84. The arithmetic curriculum should provide for occasional practice in making rough mental estimates with rounded numbers which are later verified.

Fifty-three, or 47.32 percent of the persons reporting, used short cuts, to a greater or lesser extent, in solving arithmetic problems mentally. Other conclusions concerning short cuts were: (1) they saved time, but increased the number of steps; (2) multiplication and addition were used somewhat more than subtraction; (3) division was seldom used; (4) the same short cut was seldom used by several persons; and (5) those who used short cuts showed understanding of number relationships. Short cuts are not recommended in the elementary school although the secondary schools should make some use of them.

Recommendations for Further Study

It is recommended that the following studies be made to: (1) discover if similar investigations conducted in cities of different sizes, localities, and industries would yield results comparable to the present study; (2) ascertain the consumer uses of mental arithmetic; (3) ascertain the social uses of mental arithmetic; (4) discover the extent to which prospective arithmetic teachers can solve arithmetic problems mentally; and (5) outline a balanced program of arithmetic instruction for each grade level which gives due attention to mental arithmetic, a combination of mental and written arithmetic, and written arithmetic.

DEFINING THE ADMINISTRATIVE FUNCTION

M. L. STORY
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WHAT ARE THE EFFECTS of our increasing emphasis upon democracy in school administration in changing the actual roles of the school board and superintendent in the administrative scheme? By law and custom the superintendency has developed as an executive office having the rather clear-cut function of executing policies which are formulated and adopted by the board of education. In the same way, the board as a representative legislative body has had traditionally the policy-making function. However, since we have come to expect the board to rely more and more heavily upon the superintendent's recommendations in making policies, the superintendent has gradually become almost uniquely responsible for the formulation of school policy as well as for its execution. Consequently, it is of the greatest significance that this newer conception of administration as a participative function virtually gives to the working school staff a large responsibility in both the legislative and executive functions.

Legally, the administrative structure has remained largely unchanged. Yet the literature of education is replete with this newer conception of administration as a widely shared, cooperative function. Thus a central question is raised: Is the modern superintendent to be ruled in his actions by group opinions? Is there an evolving ethical code of school administration which makes the administrator morally responsible to his staff? Above all, are there differences of opinion on this issue among school personnel at different administrative levels?

In a recent, nation-wide study of opinions about democracy in school administration this question was included as one of a number of pertinent issues. Participating in the study were 1817 educators (920 teachers, 897 central administrative personnel) from city school systems throughout the country. An important aim of the inquiry was that of determining whether there were significant disagreements between teachers and administrators on the question of what constitutes democratic school administration.

Respondents were asked, first of all, to choose among four criteria (or to submit an alternative defining the administrative function. The criteria were formulated after extensive try-out and submission to a jury of experts in the field. Table I lists the criteria and the responses of teachers, supervisors, principals and superintendents from

TABLE I

CRITERIA DEFINING THE ADMINISTRATIVE FUNCTION

	Percent Choosing Response			
	Teachers	Supervisors	Principals	Superintendents
Morally and ethically, administrative officials in a school system are agents acting for the faculty and should be held accountable for carrying out the policies of the faculty at all times.	16.6	12.2	8.6	1.8
Administrative officials have a moral or ethical right to veto group policies, but the faculty schould have the prerogative of overriding such a veto if a sufficients majority vote is obtained.	23.0	15.9	9.4	1.8
Administrative officials should generally be guided by the opinions of the faculty but should have no moral or ethical obligation to the group except on policies which directly concern the welfare of the group.	26.2	38.2	36.8	34.5
Administrative officials should certainly consider faculty opinion, but their positions are such that they should not be accountable for their actions to anyone except the board of education.	23.1	24.8	31.3	47.4
Other (differing opinion written in)	0.9	1.3	1.5	1.8
No response	10.2	7.6	12.4	12.7
	100.0	100.0	100.0	100.0

TABLE II

RESPONSE OF PARTICIPANTS CONCERNING THE ESSENTIALITY OF A PARTICULAR PRACTICE

(The faculty demands of the superintendent or principal a full explanation when either official fails to carry out, or acts contrary to, the expressed will of the group.)

	Percent Choosing Response				
	Essential	Important	Immaterial	Undesirable	No Response
Teachers	22.3	42.8	5.9	18.5	10.5
Supervisors	13.8	43.2	6.8	22.7	13.5
Principals	10.2	35.3	8.2	36.7	9.6
Superintendents	7.3	29.1	9.1	50.9	3.6

the 81 participating city school systems.

This table shows that rather distinct differences of opinion do exist on this question of an administrator's responsibility to his staff. It is notable that teachers chose responses 1 and 2 in substantially greater percents than did principals and superintendents. There is, in fact, an almost unique graduation of percents ranging from the teacher as a "receiver" of policies, through supervisors and principals as "intermediaries" to superintendents as policy "senders." This particular trend was evident in the entire study, i. e., that teachers tended in greater proportion to choose the more "democratic" criteria, with supervisors ranking next, and with principals and superintendents following in that order.

In the second part of the study, which was concerned with the essentiality of particular practices in a democratically administered school system, a parallel question was raised. Participants were asked to indicate whether they believed a particular practice to be "essential," "important," "immaterial," or "undesirable." The results are shown in Table II.

Here again, there is a similar and graduated divergence of opinion, with teachers choosing "essential," and "important" in appreciably greater proportion than administrators. Approximately 65 percent of the teachers considered the stated practice "essential" or "important" while, on the other hand, slightly more than 50 percent of the superintendents considered it "undesirable." This rather distinct difference in viewpoint reflects again the trend toward a dualism between administrator and teacher.

It is certainly important to our developing conception of democratic school administration that we avoid the dangers of self-centered factionalism and preserve the balance between "rights" and a workable conception of authority. Our trend toward greater democracy has been engendered by the highest educational motives. It would seem paradoxical if such a movement resulted in a struggle between forces rather than the spirit of true cooperation which was its governing motive.

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BOOK REVIEWS

L. Joseph Lins, University of Wisconsin; Valworth Plum, University of Minnesota;
John Schmid, Michigan State College

Campbell, Clyde M., Editor, Practical Applications of Democratic Administration (New York: Harper and Bros., 1952), pp. x + 325, $3.00.

Professor Campbell has assembled a variety of chapters in this symposium designed to broaden the perspective of practicing school administrators and administrators-in-training with regard to the leadership functions of the public school. In the opening two chapters, the editor and Robert Koopman describe the contemporary American "social revolution" and place the responsibility for solving its problems squarely in the lap of the local community.

> Local problems if broadly conceived are an interwoven part of state, national, and international problems. What a culture is depends upon what people think, believe, and do in the component parts of that culture. . . . Improving a culture, then, means improving local communities.

The public school system, as an integral part of the local community must take the initiative through its administrators to train both youth and adults for democratic participation; a school structure properly articulated with the community (1) can provide opportunity for training and (2) would require the school to emulate the ideal social process within its own structure. Perceptive and capable administrators are needed to form the school structure and programs in such a way that leadership may be nurtured. Responsibility for developing such personnel lies in the professional education program for school administrators. This, in brief, is the argument around which the symposium is built; the book is designed as a text (with study question, problems, and bibliography at the end of each chapter) to provide working materials for the professional education of administrators.

The heart of the symposium, constituting well over one-half of the pages, describes the detailed programmatic aspects of "applied educational leadership" in such areas as in-service training, school and community development, family education, and the visiting teacher service. These are reports of active and apparently successful programs, each written by the school administrator responsible for its operation.

An interdisciplinary character is introduced by the inclusion of a chapter on the social structure of the community written by sociologists and another chapter on the psychological aspects of authoritarian and democratic leadership contributed by a psychologist. The first discusses the effect on school functioning of such matters as the isolation of individuals from friendship groups, interneighborhood conflicts, and social class differences. The second summarizes the California studies of the "authoritarian personality" but also includes material on the role of situational factors which affect authoritarianism, a consideration missing in the original studies.

What kind of a perspective will the school administrator get from reading this symposium? First, he will be exposed to a philosophy of education composed of three main aspects: (1) the responsibility of the school in meeting the social problems of society, (2) the prime importance of the interdependency between the school and its community environs, and (3) the value of citizen "democratic participation" in school affairs.

Second, the school administrator will see a number of working programs which illustrate concretely this philosophy of education; but he will wonder whether the programs are, in fact, working, and whether or not leadership is being nurtured through them. He will wonder about situations in which successful programs could not be set up—a type of question which could lead naturally into an analysis of the stresses and strains of school and community organization. Such an analysis would provide a more realistic perspective to the administrator who attempts to put "educational leadership" into practice.

Third, the administrator will gain some perspective of segments of social science, but segments which are unused in the remainder of the chapters. The particular social sciences whose services are called upon for this symposium are inadequate for analysis of forces operating for and against institutional programs. The sociology is limited to an elementary description of intra-community divisions, and the psychology deals strictly with attributes of individuals.

A fairer perspective of the rapprochement between social science and education could have been afforded by drawing upon more applicable social science—particularly the theories of organization so prominent in industrial and bureaucratic research. However, some perspective is better than none. There is little chance that the reader of this symposium would fail to attain a more broad view of the close interdependence of the public school and the local community.

W. W. Charters, Jr.

University of Illinois

Commission on the English Curriculum, The English Language Arts (New York: Appleton-Century-Crofts, Inc., 1952), pp. xxiii + 501, \$3.75; \$2.25 through NCTE office to members.

The English Language Arts is a book from the minds of many people. As such, it illustrates how, through the process of communication, group thinking can be formulated, even with as complex a problem to face as the English language arts curriculum from the pre-school years through the graduate school. Leadership in this difficult task rested in Dora V. Smith, who is general director of the Commission on the English Curriculum of the National Council of Teachers of English. Associate directors are Angela M. Broening (high school), Helen K. Mackintosh (elementary school), and Porter G. Perrin (college).

The Commission, formed in 1945, and its committees will publish four succeeding volumes in the near future dealing specifically with programs in the elementary school, high school, college and university, and teacher training. The first volume, then, The English Language Arts, must be considered as an introduction to a more complete statement. At the same time, it is not purely introductory, for besides the broad outline projected, there are also illustrations of principles.

The Commission is not saying in this book, any more than was said in its predecessor An Experience Curriculum in English (1935): "Here is a curriculum for you to take and use in your community." Rather, as in 1935, the aim is to provide a source to which interested teachers, administrators, and curriculum committees may turn.

The four main parts of the book suggest its content: Making the Curriculum, Suggested Programs, Problems Faced by Curriculum-Makers, and Evaluating the Outcomes of Instruction. Two basic principles give unity to the many angles of the English language arts program set forth: (1) that development in language is an integral part of the total pattern of growth, and (2) that language should be developed in the social situation in which it is used. These principles imply that the point of departure in a curriculum must be the learner and the society in which he lives.

Chapter IV should be especially helpful in organizing any curriculum committee in the language arts since it takes the reader behind the scenes and explains how the Commission went ahead with its work. At the end is a listing of ten "crucial issues," which should be of interest to all users of the volume. The results of committee study of these issues appear in Chapters VIII-XVII. For instance, one issue is this: How can the program in the language arts recognize the importance of listening in life today? This question concerning the youngster in the language arts family is admirably discussed in Chapter XIV, The Program in Listening. Closely related as a problem but also reaching out in other ways is the succeeding chapter, Mass Modes of Communication. However, the newer problems do not minimize the forms and means of communication long a part of the English language arts; the reader can find in Chapter XVI, The Program in Literature, a discussion that is especially clear-cut and helpful.

The volume makes an outstanding contribution in its selected yet comprehensive bibliographies. Much emphasis is placed on reports of research.

In 1935 An Experience Curriculum in English was an influential work, complete in itself. Undoubtedly its successor, The English Language Arts, will also be influential, but there is a difference in the reading. This volume must be read (1) not as a complete work, but as a combination of prologue and first act that is one fifth of the whole, (2) as a discussion of a program with an unusually broad scope, pre-school through graduate school, and (3) as a product of group thinking. With these considerations kept in mind, the book rewards the reader in giving an insight into a highly significant area in education. It is to be hoped that the other four volumes will follow speedily.

Ellen Frogner

University of Minnesota, Duluth Branch

Murdock, J. H., The Teaching of Mathematics in Post-Primary Schools (Wellington, N. Z.: New Zealand Council for Educational Research, 1950), pp. 183, 12s 6d.

The American interpreter of this fascinatingly written analysis of mathematics teaching in New Zealand secondary schools is immediately impressed by the similarity existing between the problems faced by mathematics teachers in that country and those faced by teachers in the United States. It is apparent that great concern is being felt for the future of the mathematics curriculum and it is strongly urged by the author that immediate as well as remote objectives of mathematics be re-evaluated, that the meaningful understanding of concepts be developed, and that practical values of the subject be emphasized throughout all teaching of the subject. As the author points out in his preface, the book "seeks to explain the new conception of secondary school mathematics and to point out the changes in form and method of presentation rendered necessary by the new outlook."

Whereas educators in the United States are not in complete agreement on the desirability of having a "two-track" plan for ninth grade mathematics, it appears that the New Zealand plan calls for several types of curricula in mathematics throughout the entire secondary school period. The lowest level, a compulsory core mathematics course, is designed explicitly for "those who may not have much mathematical ability." For these pupils, the author does not see much academic hope; yet he challenges the teachers of these children to "start with the class where you find it;" he encourages them to disregard syllabus requirements, if necessary, and present a series of mathematical experiences that are useful in life situations. Correlations between mathematics and other subjects are advocated—the author, however, recognizes the difficulties inherent in this type of teaching.

The other types of mathematics which are offered to children in New Zealand secondary schools have higher standards of content and achievement. These are the School Certificate standard, the University Entrance standard, and the Scholarship standard. It appears that comprehensive examinations are taken in order to qualify for each level. It is the author's opinion that 40 percent of the children would normally reach the level of the School Certificate standard, that 15 percent would achieve the University Entrance standard, and five percent would attain Scholarship recognition. Pupils intending to enroll in universities are encouraged to remain two or possibly three years in the sixth form (not defined), so as to secure wider and more thorough training in mathematics before university entrance. Just how these additional years are to be spent, and what the curriculum would consist of are not described.

Well over half of the book is devoted to a discussion of methods of teaching and a cursory treatment of a series of miscellaneous topics, such as training of teachers, transfer of training, accuracy, postulational thinking, common sense in mathematics, approximation, fear in mathematics, puzzles and fun, examinations, and girls and mathematics. Although these sections are altogether too brief for a book which is intended to treat the teaching of mathematics, they express a point of view which in general is in accord with present-day thinking among American educators.

Harry C. Johnson

University of Minnesota, Duluth Branch

Stone, Calvin P., Editor, Annual Review of Psychology, Vol. 3 (Stanford, California: Annual Reviews, Inc., 1952), pp. 462, $6.00.

The 1952 edition of Annual Review of Psychology is the third in a series which first appeared in 1950. It fills a definite need for educators in that it brings together in a single volume a compilation, evaluation, and interpretation of the leading psychological literature in seventeen areas. Each section is written by recognized authorities in the area being summarized.

Of greatest immediate interest to professional educators are the sections on educational psychology, child psychology, individual differences, and counseling.

The section on educational psychology is summarized by J. K. G. Elmgren of the University of Gothenburg, Sweden, one of three European contributors. After pointing out that experimental learning psychologists have almost completely neglected the study of children's learning in the school situation, he reviews the literature under the headings of child study and the educational program, intelligence and aptitude testing, and achievement testing and school learning.

In their section on child psychology, Vincent and Helen Nowlis, of the State University of Iowa Child Welfare Research Station, observe from the literature that "most research in child psychology is distinguished by lack of reference to systematic theory." This is the most critical review in the volume.

Improved research technique in studying individual differences is reported by L. D. Humphreys of Stanford University. Investigators are apparently defining their problems in a fashion that will lead to clear-cut experimental answers. The ambiguities of the nature-nuture controversy are being increasingly avoided.

Counseling, therapy, and diagnosis are reviewed by W. G. Gilbert of the University of Illinois Student Counseling Center. Gilbert considers the integration of varying points of view as a significant feature of the counseling literature produced within the last year. He sees a rather large gap existing in the general problem of relating diagnosis to counseling therapy. Pepinsky's 1948 study on diagnostic categories in clinical counseling continues to be the only significant study in this area.

Other sections of interest to educators include reviews of the experimental literature in vision, hearing, somathesis and chemical senses as well as sections on personality, social, industrial, and comparative psychology.

A section on motivation by O. H. Mowrer of the University of Illinois appears for the first time in this edition and a useful section on statistical theory and research design follows the precedent established in the 1951 edition.

This volume can assist educators in keeping informed on recent research in related psychological areas. These are areas in which they can ill afford to be uninformed.

Lawrence P. Blum
University of Wisconsin (Milwaukee Extension)

Brief Commentaries

Casey, Robert S., and James W. Perry, Editors, Punched Cards: Their Applications to Science and Industry (New York: Reinhold Publishing Corp., 1951), pp. viii + 506, $10.00.

In this book is a collection of punched card systems and techniques such as the writer has not seen previously in one single volume. Treated are "Keysort," "E-Z Sort," Pathfinders, "Flexisort," "Findex," IBM, Remington Rand, and "Filmsort." In addition the "Univac" system is mentioned. This system is not a punched card system but rather uses a magnetic tape.

Over 30 individuals have contributed to this work. Though emphasis is placed upon use by scientists, engineers, librarians, and industry, the educational research worker and administrator particularly in the field of higher education can profit by knowledge of the techniques in handling large quantities of data.

No previous knowledge of punched cards is assumed.

L. J. L.

Deese, James, The Psychology of Learning (New York: McGraw-Hill Book Co., Inc., 1952), pp. iv + 398, $5.50.

It is assumed that the student using this textbook has had an introductory course in psychology. Chapters are: reinforcement and learning, the nature of extinction, stimuli in learning and the process of discrimination, motivation and learning, negative reinforcement and punishment, serial learning and the chaining of responses, factors affecting rate of complex learning, retention, forgetting, transfer of training, efficiency in human learning, thinking and problem solving, learning and the nature of the learner, emotion and conflict, physiological problems in learning, and current theoretical problems.

L. J. L.

Displaced Persons Commission, The D P Story (U. S. Government Printing Office, 1952), pp. xi + 376, $1.00.

This is the final report of the United States Displaced Persons Commission. It is a report of what has been done in the resettlement of over 400,000 immigrants into the United States and its territories and possessions and what lies ahead relative to additional displaced persons in the interest of world peace. Educators cannot disregard the problems involved, for in recent years our youth have come to be, of necessity, more "world" conscious.

L. J. L.

Freund, John E., Modern Elementary Statistics (New York: Prentice-Hall, Inc., 1952), pp. x + 418, $5.50.

Only a knowledge of arithmetic and some high school or college algebra are assumed necessary as background for a course using this textbook; thus many theorems are equations are stated without proof. Exercises or problems are selected from the various natural and social sciences.

The book is divided into four sections: descriptive statistics, probability and sampling, prediction and correlation, and special topics. Included are chapters or sections on multiple, partial, and nonlinear correlation; time series; analysis of variance; tests of randomness; and confidence intervals.

L. J. L.

✓ Grambs, Jean D., and William J. Iverson, Modern Methods in Secondary Education (New York: Wm. Sloane Associates, 1952), pp. xiv + 562, $4.75.

This book is an attempt to offer to the secondary teacher the best thinking about teaching practices in light of what the past decade has produced in curriculum organization and methodology. The following topics are treated in a well documented exposition: recognizing student differences; curriculum of the high school; developing democratic behavior in the classroom; the unit and lesson plan; providing materials for learning; learning activities—community resources; discussion, sociodrama, and related techniques; group techniques in the classroom; securing more permanent learning; classroom management; slow and fast learners; communications skills, discipline; testing and evaluation, grading and reporting student progress; counseling and guidance; and the teacher in the school and the community.

J. S.

Jersild, Arthur T., In Search of Self (New York Bureau of Publications, Teachers College, Columbia University, 1952), pp. xii + 145, $2.75.

What is the role of the school in promoting self-understanding? Jersild, as pointed out by Stephen M. Corey in the foreword, "believes that the child has more capacity for understanding himself than we educators . . . have ever realized." Only through understanding himself can the teacher aid the pupil in self-understanding. Written compositions of youngsters were analyzed, individual and group interviews were held, and contrasts were made between what the children said about themselves and what the teachers thought they would say.

L. J. L.

Macomber, Freeman Glenn, Teaching in the Modern Secondary School (New York: McGraw-Hill Book Co., 1952), pp. xi + 348, $4.25.

Macomber had the inexperienced rather than the experienced teacher in mind in writing this text. He includes unit planning, class organization, guidance, democratic practice, and curriculum. The high-light of the book is the numerous examples and guides helpful to the beginning teacher.

L. J. L.

Modley, Rudolf, and Dyno Lowenstein, Pictographs and Graphs (New York: Harper and Bros., 1952), pp. 186, $4.00.

Visualized information is faster, more direct, more dramatic, and easier to remember. This is a book on how to develop and present pictorial illustrations for simple and rapid understanding of facts and why. There are over 120 figures and plates.

L. J. L.

Smiley, Marjorie B., Intergroup Education and the American College (New York: Bureau of Publications, Teachers College, Columbia University, 1952), pp. x + 212, $4.25.

The author analyzes data on existing conceptions, practices, and policies in intergroup education in selected liberal arts colleges. She analyzes and evaluates approaches to better relations between peoples of different races, nations, and religions through intergroup education as a part of general education.

L. J. L.

Waugh, Albert E., Statistical Tables and Problems (New York: McGraw-Hill Book Co., Inc., 1952), pp. xiv + 242, $3.00.

This third edition of Waugh's book differs from the first edition mainly in the addition of new material, both tables and problems. Several tables have been recomputed. The book is not meant as a text but rather as a handbook to supplement a text for an elementary statistics course or as a reference for the experienced statistician.

In addition to the tables common to many statistical textbooks, there are less common tables presented, such as areas and ordinates of skewed curves, tables of chi-square, a short table of random sampling numbers, tables of the Poisson function, and a table of chances of differing from the mean by given numbers of standard deviations.

L. J. L.

Books Received Recently*

Bowers, Henry, Research in the Training of Teachers (Toronto, Ontario: J. M. Dent and Sons and The Macmillan Co. of Canada, 1952), pp. vii + 167, $1.90.

Cattell, Raymond B., Factor Analysis (New York: Harper and Bros., 1952), pp. xiii + 462, $6.00.

Conant, James Bryant, Education and Liberty (Cambridge, Mass.: Harvard University Press, 1953), pp. xii + 168, $3.00.

Falvey, Frances E., Student Participation in College Administration (New York: Bureau of Publications, Columbia University, 1952), pp. xi + 206, $4.00.

Griffiths, William, Behavior Difficulties of Children as Perceived and Judged by Parents, Teachers, and Children Themselves (Minneapolis: University of Minnesota Press, 1952), pp. xii + 116, $3.00.

Jordan, A. M., Measurement in Education: An Introduction (New York: McGraw-Hill Book Co., 1953), pp. xi + 533, $5.25.

Miel, Alice and associates, Cooperative Procedures in Learning (New York: Bureau of Publications, Columbia University, 1952), pp. x + 512, $3.75.

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*Listing of books here does not preclude subsequent review.

Research News and Communications

Lawrence P. Blum, Student Personnel Service, University of Wisconsin Extension
Milwaukee, Wisconsin

Educational effectiveness of television studied at Fordham University. In a study conducted in cooperation with the U. S. Navy Special Services Center, partial answers have been supplied to questions which are being asked concerning education by television. Some of the answers are as follows: drama by itself was found to be not very effective; the best teaching method seemed to be narrative combined with drama or with film that explained and amplified what the narrator was talking about. The amount of learning was found to be directly related to explicitness of treatment.

The difference between good and poor teaching shows up in the television scripts, yet it is not always apparent to television professionals, who are accustomed to think in terms of entertainment rather than instruction. If training by television is to be effective, a psycho-educational specialist must be added to the team of writer and producer. His job will be to work with the men who write and produce the television programs and help them get the lessons across to the television trainees.

Further experimentation is recommended in line with the conclusion that television is an excellent training medium which can easily be made better than good classroom instruction of the kind given today. Suggested questions include: What kinds of subject matter can be taught by television? In what training programs and at what levels of training can television be used most economically and advantageously? What are the qualities of a good television instructor? How can good television instructors be found and developed? What production techniques are best for educational television? What instructional treatment is best for the different kinds of subject matter encountered in educational television?

The report of the experiment, PB 104414, Training by Television, 24-page mimeograph, is available at 75¢ each from the Office of Technical Service, U. S. Dept. of Commerce, Washington 25, D. C.

A survey of guidance problems and practices is being conducted in the elementary schools in Maryland. A survey of a representative number of the elementary school teachers of the state is being made in order to determine the incidence of guidance problems encountered, the qualifications of teachers and teacher-counselors to cope with such problems and the tools, techniques and procedures most frequently employed. Specific recommendations concerning guidance services in the elementary schools of Maryland will result from the study. The State Department of Education of Maryland is cooperating in the survey.

American Heart Association announces rules for first annual award of $1,000. The Howard W. Blakeslee Award of the American Heart Association has been set in the amount of $1,000, it has been announced by the Chairman of the Awards Committee. The award has been established to encourage the best standards of scientific reporting, and will be given annually to the individual whose creative efforts have contributed most toward public understanding of the cardiovascular diseases in any medium of communication—including newspapers, magazines, books, radio, television or films.

Entry blanks and further information may be obtained from the Chairman, Managing Committee, Howard W. Blakeslee Award, American Heart Association, 44 East 23rd Street, New York 10, New York.

Microcard publications available in physical education, physiology, recreation, and allied areas. Springfield College has been authorized by the National Microcard Committee to publish microcards in physical education, physiology of exercise, recreation, and allied areas. This project is conducted on a non-profit basis as a service to the professions involved.

Active support for the project has been given by the National Research Council of the American Association for Health, Physical Education and Recreation.

Initial microcard emphasis has been placed upon unpublished research materials, particularly doctoral dissertations, and upon important books now out of print. The selection of specific titles for microcarding has been largely by ballot of members of the Research Council and other professional leaders in the field.

Further information can be secured from Dr. H. Harrison Clarke, Director of Graduate Studies, Springfield College, Springfield, Mass.

XIth Congress of the Association Internationale de Psychotechnique, Paris (27th July - 1st August, 1953). The Congress will take place from the 27th of July to the 1st of August, 1953. It is to be held under the auspices of the following French societies and institutes: Institut de Psychologie de l'Universite de Paris, Laboratoire de Psychologie Appliquee de l'Ecole Pratique des Hautes Etudes, Institut National d'Etude du Travail et d'Orientation Professionnelle, Societe francaise de Psychologie, Associaton Professionnelle des Psychotechniciens Diplomes.

The general subjects proposed for discussion are as follows: (1) The experimental method—fundamental to the progress of applied psychology; (2) Preparing the adolescent for manhood—review of the problems of educational psychology and vocational training; (3) Clinical psychology—the adjustment of the individual to the family and to social life in general—mental hygiene; (4) Assessment of aptitudes and abilities, the present position—techniques of testing in educational and vocational guidance and in selection—the development and refinement of criterion measures; and (5) New aspects of the psychology of the organization of work—psychological factors in the simplification of work and in productivity—psychotechnical analysis of work—problems of fatigue and monotony—the psychology of industrial relations—inter-personal relationships and group dynamics in industry—the contribution of applied psychology to the prevention of accidents in industry and on the roads.

Evaluation of Guidance Services in Negro Colleges. On the basis of questionnaire returns from 30 Negro colleges and universities throughout the nation, a 31-page report entitled An Evaluation of Guidance Services in Negro Institutions of Higher Learning has been prepared by John H. Camper, Chairman, Research Committee of the National Association of Personnel Deans and Advisors to Men in Negro Institutions. The report covers the following areas: maintenance and use of student's records, health services, occupational information services, placement services, testing services and follow-up services. Although there are weaknesses in some of the areas of guidance, there is a trend towards increasing the quantity and quality of these guidance services. Detailed data gathered from the questionnaire survey are included in the report.

Relation between Allport-Vernon Study of Values and Kuder Scores. A study by Julian C. Stanley, Jr. and Robert S. Waldrop makes a comparative and exploratory analysis of relationships between the Allport-Vernon Study of Values and the Kuder Preference Record. A comparison of the results obtained from students at Peabody and Vanderbilt indicates that sex differences are clearer than institutional differences in a limited number of subjects. The authors cite the need for a well-designed study involving the Strong, Kuder, and Study of Values.

Prediction of academic success at the University of Kentucky. The Kentucky Classification Battery, a 90-minute examination of General Ability, English and Mathematics, has proved to be a valuable instrument for predicting academic success at the University of Kentucky. Correlations between total scores on the battery and one-year grade-point standing fro the 1950-51 school term were as follows: College of Education (N of 32), .73; Arts and Sciences (238 male students), .59; College of Commerce (N of 96), .52; College of Engineering (N of 137), .46. The correlations for the Colleges of Commerce and Education have been corrected for restriction of range.

In the College of Law, total scores of the Kentucky Classification Battery correlated .53 with final grade-point standing for a class of 69 students; in combination with pre-Law standing, the multiple R was .65; the use of scores on the Stoddard-Ferson Law Aptitude Test did not further increase the correlation. In the College of Pharmacy, a combination of K. C. B. total scores and pre-Pharmacy grade-point standing gave a multiple R of .62 with final grade-point standing. Use of scores from the United States Employment Service General Aptitude Test Battery did not increase the predictive efficiency.

Formation of a new evaluation and advisory service for school and college test users has been announced by Educational Testing Service of Princeton, New Jersey. Dr. Paul Diederich, a member of the ETS Research staff, will become director of the new unit. Dr. Diederich, formerly Associate Professor of English at the University of Chicago, was from 1935 to 1941 a member of the evaluation staff of the 8-year study of the Commission on the Relation of School and College.

Questions or requests for information on testing, the use of tests, or related topics may be addressed to the Director, Evaluation and Advisory Service, 20 Nassau Street, Princeton, New Jersey. A similar service will be inaugurated at the same time in the area served by the Los Angeles Office of Educational Testing Service. Western schools and colleges should address their inquiries to the Director, Evaluation and Advisory Service, Educational Testing Service, 4641 Hollywood Blvd., Los Angeles, California.

Fourth Annual Conference on Educational Research held in California.

Dr. John A. R. Wilson, Department of Education, Santa Barbara College, reports that approximately 175 California educators attended the Fourth Annual State Conference on Educational Research held November 7th and 8th in the Leamington Hotel, Oakland, California. The theme of the conference this year was "Improving our Schools: Challenges to Research." The conference was sponsored by the State Advisory Council on Educational Research and the California Teachers Association.

The conference was organized around a program that started with "Changing Objectives and Their Implications for Research," followed by "Friendly Criticism of Educational Research," which led up to sections which reviewed recent research that had already taken place and culminated in "Challenges for the Future."

The sections reported research on the following topics:

1. Studies in Public Opinion and Attitude Formation Towards the Schools; Chairman, Henry I. Weitzel, Pasadena City Schools. This group studied several methods of changing the climate of opinion. The evaluation of most of the studies was the practical one of whether the bond issue or rate increase was passed by the districts after various techniques were used to change the situation.
2. Research on the Curriculum; Chairman, Joseph Axelrod, San Francisco State College.
3. Research on Teaching Techniques and Teaching Effectiveness; Chairman, Alfred C. Jensen, San Francisco State College.
4. Work Section on Developing Regional Test Norms in which a general testing program throughout the state was planned with the test scores to be turned in to the committee in order to develop state-wide norms; Chairman, Merle Elliott, Oakland City Schools.
5. Cooperative Research on the Gifted Child; Chairman, Lillie L. Bowman, San Francisco City Schools.

6. Research on School Holding Power; Chairman, Morris Williams, San Francisco City Schools. This group reviewed five studies covering Southern California, San Francisco, Stockton, San Diego, and a Canada-wide study.
7. Planning Longitudinal Records and Pupil Growth Studies; Chairman, Faith Smitter, Santa Barbara County Schools.

In general, the consultants of the section committees reported recent research studies with which they were familiar. The section as a whole participated in discussion and evaluation of the studies as they were reported. The Fifth Annual State Conference on Educational Research will be held in Santa Barbara in the fall of 1953.

Study of Financing Research Projects in Student Personnel is being conducted by W. A. Mann of Michigan State College. A set of detailed budget sheets have been prepared calling for reports on budgeting sources, personnel and facilities used in current research projects. The study is made possible by the cooperation of several participants in the Conference of Administrators of College and University Counseling Centers, held annually since 1950 and this year at Michigan State College.

Study adult education at the University of Wisconsin. Thomas J. Aylward, who received both his B. S. and M. S. from the University of Wisconsin, has been selected by the Ford Foundation to conduct a research study of the facilities, methods, and scope of the adult education program of the Extension Division. He is the first recipient of the "internship" grant at Wisconsin.

Fellowships for educational research at the University of Florida, Gainesville, Florida. Twenty years ago the Bureau of Educational Research set up a plan to promote educational research which involved ten research fellows. These persons were to be directed by the Bureau of Educational Research and to give half or more time to research. There are now five such fellows, each paid a liberal stipend, who are engaged in carefully selected educational research projects. This type of provision, which provides time for educational research, has been found necessary if such work is to be done thoroughly and accurately.

Study of attitudes. During the year 1950-51, Dr. A. R. Mead, formerly of the University of Florida and now of Athens College, Athens, Alabama, has developed a procedure to study the growth of attitudes. It consisted essentially of a series of carefully planned interviews with a person who has previously expressed a willingness to share in the project. The interview was designed to elicit information about the changes in the person's attitude under consideration. Using this procedure and a disc recorder, Dr. Mead made two interview studies. One dealt with attitudes of "concern for the unfortunate" involving a teacher of many years experience and the other concerned attitudes toward the Negro race. This involved a 35 year old man who was born and continued to live in a southern state. Both of these records show the changes from period to period and also some of the factors which cause these changes.

Educational research groups in California. The state of California is blanketed with organizations designed to meet the problem of stimulating, interpreting and disseminating educational research. While many cities and counties have research departments, three large organizations working toward these objectives are:

1. The California Educational Research Association, Northern Section.
2. The California Educational Research and Guidance Association, Southern Section.
3. The State Advisory Council on Educational Research.

The California Educational Research Association, Northern Section, meets once a year in the spring. The place of meeting is on the campus of one of the universities or colleges located in the northern half of the state. A different campus is selected for each annual meeting. The Association is controlled by professional school men from all levels of education to inform one another of work in educational research. Graduate students from the universities are frequently invited to report upon their research. While the Association sponsors no publication, research papers are usually briefed for distribution. This Association has been in existence for over twenty-five years.

In the southern part of California, The California Educational Research and Guidance Association serves to bring together those interested in all types of research. However, as the name implies, considerable emphasis is given to guidance. Three meetings a year are held in Los Angeles, though one of these may be a joint meeting with a state guidance association. The Secretary of the Association does an excellent job of summarizing the material presented at each meeting and mailing this summary to the membership. Like its counterpart in Northern California; this organization does not have its own publishing organ.

The third group which is statewide in its influence and membership is the State Advisory Council on Educational Research. This organization is only three years old and has as its chief sponsor The California Teachers Association. However, the Council is as independent in its operation as are the other associations which serve to focus attention upon educational research. As annual conference is held for reviewing research and for bringing together those interested in discussing the vital problem of education.

At all of these conferences, reports on individual, group, and institutional research projects are given. The *California Journal of Educational Research* published by the State Advisory Council on Education Research serves all other associations and is a strong influence for promoting scientific study of our educational problems.

Research Abstracts and Bibliographies

T. A. Lamke, Iowa State Teachers College, Cedar Falls, Iowa

Beach, Fred F. Selected References on the State Department of Education. U. S. Office of Education Circular No. 345, 1952 (Washington, D. C.: Federal Security Agency, Office of Education, 1952), 18 pp., n. p.

A comprehensive annotated bibliography on the origins, structure, functioning, financing, and personnel of state departments of education. Cites something over one hundred references, most of which should be found in any education library.

Birkmaier, Emma Marie, Editor. Illustrative Learning Experiences. The Modern School Practices Series, Number Two (Minneapolis, Minn.: University of Minnesota Press, 1952), 108 pp., n. p.

Twelve typical teaching units used in the University of Minnesota laboratory high school. The units are given in some detail and were prepared by instructors in the different areas represented. Based on the philosophy that learning experiences should be planned and executed by students in cooperation with their teachers, materials are presented for units in literature, social studies, chemistry, algebra and geometry, Spanish, and journalism.

Buffalo Public Schools in the Mid-Twentieth Century (Albany, N. Y.: University of the State of New York, 1951), 398 pp., n. p.

A careful, objective, survey of the present status of public education in a large urban industrial community. Surveys of this kind generally probe three points: what is being done, what the needs are, and what changes are required in the current program so that it will better meet the needs. This study is distinguished by its thoroughness and by the concreteness of its recommendations. One of the significant general conclusions might serve as an indictment of public education in many communities: "The chief need in Buffalo is for a revival of the faith in the public schools, for the active participation of all groups in improving their service."

Conference of Factorial Studies of Aptitude and Personality Measures (Princeton, N. J.: Educational Testing Service, April, 1952), 33 pp., n. p.

A report of the proceedings at a three-day meeting of some of the leading exponents of factor analysis. The conference was called to explore the possibilities of coordinating factorial research work. The report will be of interest to workers in the area.

Courtis, Stuart A. Maturation Units and How to Use Them (9110 Dwight Ave., Detroit, Michigan: the author, 1950), 180 pp., n. p.

Professor Courtis presents in more detail than has previously been generally available, his conception of a "new and revolutionary" organization of ideas which, it is hoped, will assist in making the biological sciences (here including education) as exact as the physical sciences. Dr. Courtis states that the ideas are "the culmination of more than forty years of careful research and study." Words used by Winston Churchill might be applied to Courtis: in a long and fruitful career, he has "not always been wrong."

Operationally, the theories are somewhat complex, and the occasionally dogmatic and unusual style may tend to discourage some investigators from considering the material on its own merits.

Essentially, Courtis reminds us that many growing things, whether cells, men, or societies, have similar patterns of development. He attempts to apply workable methods for discovering the stage of growth attained by the organism under examination and for predicting future growth.

With the technique he develops very concretely, educational experiments might proceed thus:

> "1. Measure a large group of subjects growing under given controlled conditions for a long enough period to secure for each individual an equation of growth.
>
> "2. Make a scatter diagram of status at the beginning of the period and the rate of growth during the period, matching the subjects in pairs to be equal in both criteria.
>
> "3. Make two equal groups by selecting pairs of individuals equal in terms of the two criteria, putting one individual of each pair in each group.
>
> "4. Then let both groups grow under the given conditions for a period sufficiently long to produce easily measured growth increments, predicting in advance what this growth will be. If predicted and actual growths are equal for both groups, the two groups are proved equal.
>
> "5. Allow the experimental factor to act on one group keeping all factors controlled, and predicting the growth of the control group, as a test of adequacy of the control.
>
> "6. If the result of Step 5 is satisfactory, find the difference between the rate of growth of the control group and the rate of growth of the experimental group. This difference is the measure of the effect of the experimental factor, and may be compared with the rate of growth of the control group taken as unity, both being expressed in isochrons."

Davison, Hugh M., Editor. Penn State Review of Educational Research. May, 1952, Vol. III, No. Two (State College, Pa.: Division of Educational Research, Department of Education, School of Education, Pennsylvania State College, 1952), 63 pp., n.p.

Contains a number of papers selected because of their interest to the classroom teacher. The papers stress research and its application to educational problems.

Debiesse, Jean. Compulsory Education in France (Paris: UNESCO; obtainable from the Columbia University Press, New York, 1951), 149 pp., n.p.

A useful summary of the historical development, legal background, and present status of primary (pupils aged 6 to 14) education in France. Contains a selected bibliography of 46 items.

Earned Degrees Conferred by Higher Educational Institutions, 1950-51. U.S. Office of Education Circular No. 333, 1952 (Washington, D.C.: Superintendent of Documents, 1952), 121 pp., 60¢.

The fourth in a series of annual reports listing earned degrees conferred by colleges and universities in the U.S. Tabulations are given by institution, level of degree, sex of recipient, and by field.

Fund for Adult Education, Ford Foundation.

After trial in 1951-52 by from fifty to sixty adult discussion groups in various parts of the country, the special materials developed for the program have been released and are available from the Experimental Discussion Project, Fund for Adult Education, 141 W. Jackson Blvd., Chicago 4, Ill. While designed to aid in the organization and conduct of adult leisure time discussion groups, the materials would also seem to be particularly useful and stimulating for high school and college classes. Materials for two topics are available: "Great Men and Great Issues in Our American Heritage," and "World Affairs are Your Affairs." Each set of materials consists of a series of essays prepared by specialists, a guide to appropriate films for each session, a leader's guide, and a discussion manual. A sample set may be obtained on your letterhead from Mr. Glen Burch, The Fund for Adult Education, 914 E. Green St., Pasadena 1, California.

Garber, Lee O. The Yearbook of School Law, 1952 (3812 Walnut Street, Philadelphia, Pa.: the author, 1952), 105 pp., $2.25.

This third volume of the second series reviews important decisions of higher courts in December, 1950–November, 1951, which will be of interest to educators. An appendix treats in some detail the legal aspects of racial segregation in public schools.

Gregg, Russell T., and Raymond E. Schultz. Personal Expenditures for High School Education (Madison, Wis.: School of Education, University of Wisconsin, 1951), 48 pp., n. p.

An extensive sampling study of the direct and indirect expenditures made by Wisconsin pupils because of their high school attendance. Findings indicated that mean total pupil expenditures in four-year high schools in Wisconsin ranged from $69.70 to $197.60 per school year, depending chiefly on the socio-economic status of the community. Data are supplied on items for which money is spent; how expenditures are related to parental occupations, family income, grade in school, sex of pupil, place of residence, number of pupils in family, size and location of school, pupil dropout rates, and certain policies and practices of the schools.

Handbook of Suggestions on the Teaching of Geography (Paris: UNESCO; obtainable from the Columbia University Press, New York, 1951), 103 pp., 75¢.

One outcome of a UNESCO conference attended by experts in geography teaching from 23 nations, this booklet suggests ways in which the study of geography can "assist attitudes of international goodwill to arise naturally in the minds of children." An appendix contains addresses of sources in 19 countries from which geographical pictures or other visual aids may be obtained. A selected bibliography of 120 titles in English and French is included.

Havighurst, Robert J., and others. A Community Youth Development Program. Supplementary Educational Monographs, Number 75, June, 1952 (Chicago, Ill.: University of Chicago Press, 1952), 59 pp., $1.50.

The first in what is to be a series of reports on an experimental program designed to make use of the best and soundest knowledge in the area of child development. A representative community of some 42,000 population was selected, and with the aid of funds from the C. A. Moorman Foundation, a long-term plan of community action was developed to (1) discover early the children who can profit most from special help, (2) develop a corps of local community residents to help these children, at no extra cost to the community, and (3) provide for expert consultation, direction, and evaluation of the project. The monograph summarizes recent findings in the field of child development as well as reporting on the first six months of the program.

Johnson, Leighton H. Development of the Central State Agency for Public Education in California, 1849-1949. University of New Mexico Publications in Education, Number Four (Albuquerque, New Mexico: University Press, 1952), 139 pp., $1.50.

An historical study of the origin, growth, and development, since 1849, of California's State Department of Education.

Merritt, Eleanor, and Henry Harap. Trends in Production of Teaching Guides (Nashville, Tenn.: Division of Surveys and Field Services, George Peabody College for Teachers, 1952), 31 pp., 50¢.
A critical study of 543 curriculum guides produced in 1948-50. Reports trends in general objectives as well as analyzing the material by subject-matter areas.

Musselman, Vernon A., and others. Improving the High School Program through Unit Teaching. Bulletin of the Bureau of School Service, Vol. XXIV, Number 4, June, 1952 (Lexington, Ky.: College of Education, University of Kentucky, 1952), 80 pp., 50¢.
Contains carefully-worked out sample lesson plans for units in high school science, mathematics, literature, sociology, and business. Each unit includes a bibliography, a list of audio-visual aids, and a list of free or inexpensive learning materials.

Newell, Clarence A. Handbook for the Development of Internship Programs in Educational Administration (New York: Teachers College, Columbia University, 1952), 55 pp., $1.00.
Discusses the case for internships in educational administration and suggests methods of starting such programs. Contains a summary of the history and development of programs of this kind in seventeen institutions, and suggests areas of needed research.

A Procedure for Evaluating a Local Program of Trade and Industrial Education (Chicago: American Technical Society, 1952), 64 pp., n. p.
A detailed plan for determining (1) whether a local program of vocational trade and industrial education meets community needs and (2) to what extent the program provides for the preparation and training of industrial workers, and for needed services to industrial workers and management. As is pointed out in the bulletin, the evaluation was designed to be analytic; it does not pretend to measure, along a scale, the effectiveness of a given program.

Smith, Mary Elizabeth Reichert. Patterns of Interpersonal Preferences in a Nursing School Class. Studies in Sociology, Abstract Series, Vol. V (Washington, D. C.: Catholic University of America Press, 1952), 22 pp., 25¢.

A study of a class in a nursing school as a social group. Sociograms made at intervals over an approximately two-year period indicate the changes in social structure in this group which ranged from 85 students at the beginning of the study to 54 at the end.

Summary of Statistics on Selective Service College Qualification Test of May 26, 1951, June 16, 1951, June 30, 1951, July 12, 1951 (Princeton, N. J.: Educational Testing Service, 1952), 71pp., n. p.

Of particular interest are the statistical analyses by regions of the U. S., by academic major, and by academic classification.

Traxler, Arthur E., Editor. Education in a Period of National Preparedness. American Council on Education Studies, Series I, Number 53, Vol. XVI, April, 1952 (Washington, D. C.: American Council on Education, 1952), 144 pp., $1.50.

A report of the 16th educational conference, November 1-2, 1951, held under the auspices of the Educational Records Bureau and the American Council on Education. Contains miscellaneous papers delivered at the meeting.

Tuddenham, Read D. Studies in Reputation: I. Sex and Grade Differences in School Children's Evaluations of Their Peers, II. The Diagnosis of Social Adjustment. Psychological Monographs, General and Applied, Number 333, 1952 (Washington, D. C.: American Psychological Association, 1952), 58 pp., $1.50.

An exploration of the "guess who" type of test as a means of studying social aspects of personality development in children of elementary school age. Contains a 13 item bibliography.

Ulich, Robert. Religious Perspectives of College Teaching (New Haven, Conn.: Edward W. Hazen Foundation, 400 Prospect Street, n. d.), 32 pp., n. p.

"A discussion of the religious perspective in the ideals and motivation of democracy of which teachers are trustees in a special sense," this essay treats the general background of the problem, and the responsibility in this area of those who prepare teachers.

Vocational Education in the New York City Schools (New York: Board of Education, 1951), Parts I and II, 445 pp., n. p.

A comprehensive study under the direction of J. Cayce Morrison and

John J. Seidel, of vocational training classes in the New York City public high schools to determine whether: (1) the division of time among vocational subjects should be changed; (2) the vocational subjects are introduced and taught at the level at which they can be most effectively learned; (3) the employability of vocational school graduates compares favorably with that of academic graduates; and (4) the present cost of the program is essential. Interesting both from the standpoint of content and methods employed, the study concludes with nineteen specific recommendations.

Warburton, Amber Arthun. Guidance in a Rural Community (Washington, D. C.: Alliance for Guidance of Rural Youth, 1952), 156 pp., n. p.

Faced with typical rural school problems such as high turnover of teachers, irregular attendance, and early school-leaving age, the South Carolina State Department of Education called on the Alliance for Guidance of Rural Youth for help in setting up a rural youth guidance project which would serve as a pilot program for the state. This report details the procedures used and results obtained by professional and community action.

We Look at Curriculum Growth in New Jersey's High Schools, 1952 Yearbook (Trenton, N. J.: Secondary School Teachers' Association, 1952), 96 pp., $1.00.

Summarizing the curriculum changes encouraged by the State Secondary School Teachers' Association since 1935, the present yearbook examines current practices and trends as well as detailing experiences which point the way to effective curriculum building. Contains a 50 item bibliography.

INSTITUTIONS AWARDING GRADUATE DEGREES IN EDUCATION FROM WHICH THESES ABSTRACTS ARE AVAILABLE[1]

ONE OF THE DIFFICULTIES faced by workers in education is a lack of information about the research their colleagues are doing, or have just completed. While professional journals do much to disseminate research findings, other important and basic sources of information about recently completed research are published lists of thesis abstracts.

The following institutions awarding graduate degrees in the area of education report theses abstracts available. The list is based on entries in the Cumulative Book Index and the Education Index since 1943, supple-

[1] The list was obtained as a secondary outcome of a research project engaged in jointly by T. A. Lamke and Herbert M. Silvey, Iowa State Teachers College.

mented and verified by an 89% return from a postcard questionnaire addressed to all institutions in the United States awarding graduate degrees in the field of education in 1950-51 (as indicated by U. S. Office of Education Circular No. 333).

The most usual form for the abstracts is an institutional publication devoted entirely to them. Such a publication appears periodically, often at rather irregular intervals, and often covering a period of several years. In some cases the abstracts are found in an educational journal or bulletin which appears regularly, and carries material in addition to the abstracts. In a few cases the abstracts are mimeographed and produced chiefly for institutional circulation although they may be available to others on request.

Inquiries and orders for theses abstracts should be directed the the institutions concerned. Corrections and additions to this list should be directed to the editor of this section.

Alabama College for Negroes, Montgomery, Alabama
Alabama Polytechnic Institute, Auburn, Alabama
Alabama State Teachers College, Montgomery, Alabama

Arizona State College, Flagstaff, Arizona
University of Arizona, Tucson, Arizona

Claremont College, Claremont, California
Mills College, Oakland 13, California
San Jose State College, San Jose, California
Stanford University, Stanford, California
University of California, Berkeley, California
University of California, Los Angeles, California
University of Redlands, Redlands, California
University of Southern California, Los Angeles 7, California

Colorado State College of Education, Greeley, Colorado
University of Colorado, Boulder, Colorado
University of Denver, Denver 10, Colorado

University of Connecticut, Storrs, Connecticut
Yale University, New Haven, Connecticut

Florida State University, Tallahassee, Florida
University of Florida, Gainsville, Florida

Atlanta University, Atlanta, Georgia
Emory University, Emory University, Georgia

Bradley University, Peoria, Illinois
Eastern Illinois State Teachers College, Charleston, Illinois
Illinois State Normal University, Normal, Illinois
Loyola University, Chicago, Illinois
Northwestern University, Evanston, Illinois
Western Illinois State College, Macomb, Illinois

Ball State Teachers College, Muncie, Indiana
Butler University, Indianapolis 7, Indiana
De Pauw University, Greencastle, Indiana
Indiana State Teachers College, Terre Haute, Indiana
University of Indiana, Bloomington, Indiana

Iowa State College, Ames, Iowa
State University of Iowa, Iowa City, Iowa

Kansas State Agricultural College, Manhattan, Kansas
Kansas State Teachers College, Emporia, Kansas
Kansas State Teachers College, Pittsburgh, Kansas
University of Kansas, Lawrence, Kansas
University of Witchita, Witchita, Kansas

Murray State College, Murray, Kentucky
University of Kentucky, Lexington, Kentucky

Louisiana State University, Baton Rouge, Louisiana
Tulane University, New Orleans, Louisiana

University of Maine, Orono, Maine

University of Maryland, College Park, Maryland

Boston College, Chestnut Hill, Massachusetts
Clark University, Worcester, Massachusetts
Harvard University, Cambridge, Massachusetts
Massachusetts State Teachers College, Bridgewater, Massachusetts
Massachusetts State Teachers College, North Adams, Massachusetts
Radcliffe College, Cambridge, Massachusetts
Springfield College, Springfield, Massachusetts

University of Michigan, Ann Arbor, Michigan
Wayne University, Detroit, Michigan

College of St. Thomas, St. Paul, Minnesota
University of Minnesota, Minneapolis, Minnesota

North East Missouri State Teachers College, Kirksville, Missouri
University of Missouri, Columbia, Missouri
Washington University, St. Louis 5, Missouri

Montana State University, Missoula, Montana

Creighton University, Omaha, Nebraska
University of Nebraska, Lincoln, Nebraska

Keene Teachers College, Keene, New Hampshire

New Jersey State College, Newark, New Jersey

University of New Mexico, Albuquerque, New Mexico

Brooklyn College, Brooklyn, New York
City College of New York, New York City, New York
Columbia University Teachers College, New York City, New York
Cornell University, Ithaca, New York
Fordham University, New York City, New York
Hofstra College, Hempstead, New York
Hunter College, New York City, New York
New York State Teachers College, Oswego, New York
New York University, New York City, New York
Queens College, Flushing Long Island, New York
St. Bonaventure College, Bonaventure, New York
St. Johns University, Brooklyn, New York

Appalachian State Teachers College, Boone, North Carolina
North Carolina State College of Agriculture and Engineering, Raleigh, North Carolina
University of North Carolina, Chapel Hill, North Carolina
Woman's College of the University of North Carolina, Greesboro, North Carolina

University of North Dakota, Grand Forks, North Dakota

Bowling Green State University, Bowling Green, Ohio
Ohio State University, Columbus, Ohio
Ohio University, Athens, Ohio
St. Johns College, Cleveland, Ohio
University of Cincinnati, Cincinnati, Ohio
University of Toledo, Toledo, Ohio

Phillips University, Enid, Oklahoma
University of Oklahoma, Norman, Oklahoma

Lewis and Clark College, Portland, Oregon
Oregon State College, Corvallis, Oregon
Pacific University, Forest Grove, Oregon
University of Oregon, Eugene, Oregon

Lehigh University, Bethlehem, Pennsylvania
Pennsylvania State College, State College, Pennsylvania
Temple University, Philadelphia, Pennsylvania
University of Pennsylvania, Philadelphia, Pennsylvania
University of Pittsburgh, Pittsburgh, Pennsylvania

Rhode Island College of Education, Providence, Rhode Island

Furman University, Greenville, South Carolina

University of South Carolina, Columbia, South Carolina

South Dakota State College of Agriculture and Mechanical Arts,
Brookings, South Dakota

Eastern Tennessee State College, Johnson City, Tennessee
Fisk University, Nashville, Tennessee
George Peabody College for Teachers, Nashville, Tennessee
Tennessee Agriculture and Industry State College, Nashville, Tennessee
University of Tennessee, Knoxville, Tennessee
Vanderbilt University, Nashville, Tennessee

Agricultural and Mechanical College of Texas, College Station, Texas
Baylor University, Waco, Texas
Bishop College, Marshall, Texas
East Texas State Teachers College, Commerce, Texas
North Texas State College, Denton, Texas
St. Mary's University, San Antonio, Texas
Sam Houston State Teachers College, Huntsville, Texas
Southern Methodist University, Dallas, Texas
Texas Southern University, Houston, Texas
Texas State College for Women, Denton, Texas
University of Houston, Houston, Texas
University of Texas, Austin, Texas

Brigham Young University, Provo, Utah
University of Utah, Salt Lake City, Utah

College of William and Mary, Williamsburg, Virginia
University of Virginia, Charlottesville, Virginia
Virginia State College, Petersburg, Virginia

University of Wisconsin, Madison, Wisconsin

University of Wyoming, Laramie, Wyoming

College of Puget Sound, Tacoma, Washington
State College of Washington, Pullman, Washington
University of Washington, Seattle, Washington
Whitworth College, Spokane, Washington

Catholic University, Washington 17, D. C.
Gallaudet College, Washington 2, D. C.
George Washington University, Washington, D. C.
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WHAT DOES RESEARCH SAY ABOUT SELF-EVALUATION?

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SELF-EVALUATION IS A ''Johnny come lately'' in educational research and practice. In the past, teachers and evaluation experts have devoted more time to evaluating pupils' achievement than they have given to developing children's ability to evaluate their own growth. More recently, the rise of informal self-appraisal in the learning activities of many schools, plus the conviction that a major goal of education is to have pupils become increasingly independent in planning, executing and evaluating, necessitates a review of the evidence about self-appraisal as part of the total evaluation program. This report examines such evidence in a number of published and unpublished studies.

The importance of self-evaluation is suggested by a number of writers. Some ten years ago, in a summary of existing practices, Hamalainen concluded, ''The extent to which a pupil should contribute to his own evaluation is not clear. It is certain that he should enter into the process; yet how and to what extent is only partially understood at present.'' (14:182) In a description of theory and practices in evaluation Russell (28:190) suggested, ''There seems little reason to doubt that, under guidance, pupils can appraise not only the work of a period or a day but also help in evaluating a whole unit or larger piece of work.'' Raths (25) also believed that pupils who have set up their own aims must consider their own progress, in terms of changing behavior, toward the goals they have set themselves. In a yearbook devoted to the measurement and evaluation of understanding, Findley and Scates stated, ''Partly because of the fact that many of the subtler outcomes of learning (such as understanding) are difficult of appraisal and partly because it is desirable to educate pupils away from a goal of simply striving to please the teachers, it is important, certainly, by the middle of the elementary grades to begin the development of self-appraisal." (9:62-63) Grim was somewhat more specific when he said, "The pupil should share in every step in evaluation, just as he shares in the planning and carrying out of all phases of learning through problem solving both in and outside the classroom." (11:438). Other writers have also stressed the importance of self-evaluation. (6, 20)

Although self-evaluation has been commonly accepted at the verbal level, it seems to be rare at the action level. (19, 33) The comment of Orata illustrates this lag between theory and practice: "Evaluation, as an integral part of the learning process, is much more talked about than practiced." (23) This lack of emphasis upon self-evaluation in the school's appraisal program may be due to indifference, lack of knowledge, or difficulties in using a procedure unsuited to elementary and secondary school pupils and to current school practices. In regard to the last point, one may inquire how practical and valuable self-evaluative practices are at various school levels. The following sections give some clues to the use and values of self-evaluation of personal-social competence and of academic learnings.

Self-Rating of Personality

Any paper-and-pencil personality test is essentially a self-rating device for it asks the subject to rate himself on such items as keeping at his work until finished or what his classmates and friends think of him. Ellis (7) has pointed out that most personality self-rating devices have not been shown to have much validity in terms of correlation with external criteria. He states such disadvantages as the occurrence of a general over-estimation, or self-halo, effect where most people take the tests, and cites a long list of studies where the test results seemed quite unrelated to other ratings of personal-social competence.

An example of this difficulty is that of an early study by Rogers. (26) In the development of an instrument for measuring personality adjustment for children nine to thirteen years of age he used the pupil self-appraisal technique. In two forms, for boys and girls, he found correlations of only .39 between tested feelings of inferiority and clinician ratings, and of only .43 between social maladjustment and clinician ratings. Another correlation of .37 between family relationships and clinician ratings suggests that clinician's ratings may not be the best criterion against which to measure a child's self-rating of personality.

Another group of published studies related to self-evaluation are concerned with what the child or adolescent thinks are desirable traits in his peers. The criteria the child uses in judging himself may be related to standards used in judging classmates or acquaintances.

For example, MacFarlane (17) has shown that, in one group of boys, “good at games” is a valuable characteristic in each of the first, third and fifth grades, whereas “quiet,” which was desirable in the first grade, had no prestige value in the fifth grade. By this level “good looking,” not mentioned in the lower grades, is associated with desirable social-personal status. Similarly Tryon (36) has shown that boys, and even more strongly, girls shift in their rating of desirable personality traits between the ages of 12 and 15. In a study more specifically related to the ideal self, Havighurst (15) obtained data from children and adolescents in the form of an essay on the subject, “The Person I Would Like to Be.” A developmental trend was evident. In childhood, identification is with a parental figure; in middle childhood and early adolescence a romantic conception is prominent, and in late adolescence a composite picture is symbolized by an attractive young adult or an imaginary figure. The evidence seems clear that the normal child or adolescent will rate himself somewhat differently at different age levels in light of standards and values characteristic of a certain developmental level.

A comprehensive unpublished study utilizing personality tests is that of Stier. (34) He studied 325 children in five fifth grades and five eighth grades of various California schools. The investigation utilized sociometric measures, the California Test of Personality, a “Guess Who” test, a teacher rating scale of personality, an adapted form of the California Test of Personality used for peer rating, report card ratings by pupils, their peers, and their teachers, and results of standardized achievement tests. An interesting technique used by Stier was to get items on the “Guess Who” test, and the peer rating schedule comparable to certain items of the California Test of Personality. The results in terms of self-rating on the California Test of Personality indicate that girls are better adjusted than boys at both grade levels, that differences between grades five and eight are insignificant for each sex. Put another way, Stier found that girls consistently rate themselves higher on both self-adjustment and social adjustment on the California Test of Personality and a “Guess Who” test based on the same categories. Table I reveals that teachers and peer ratings of the group are more highly correlated with one another than with the self-rating of the California Test of Personality. This may mean that the influence of the teacher on peer ratings is considerable, especially at the fifth grade level. The correlations between teacher and peer rating on total adjustment for fifth grade girls ($r = .91$) and for fifth grade boys ($r = .80$) are considerable higher than other correlations. However, the ratings of eighth grade boys and their friends are in somewhat closer agreement ($r = .48$) than self and teacher ratings ($r = .30$). Stier found also that ratings of peers and teachers are closer to self-rating in the more overt personality traits but not

TABLE I

CORRELATIONS OF VARIOUS RATINGS OF PERSONALITY FOR 162 FIFTH GRADE PUPILS AND 163 EIGHTH GRADE PUPILS IN TERMS OF CALIFORNIA TEST OF PERSONALITY CATEGORIES*

	Self-Adjustment			Social Adjustment			Total Adjustment		
	Self-Peer	Self-Teacher	Peer-Teacher	Self-Peer	Self-Teacher	Peer-Teacher	Self-Peer	Self-Teacher	Peer-Teacher
Girls, Grade 5	.55	.64	.81	.49	.61	.86	.59	.66	.91
Boys, Grade 5	.45	.46	.78	.41	.65	.69	.48	.58	.80
Girls, Grade 8	.47	.60	.81	.22	.53	.65	.40	.62	.74
Boys, Grade 8	.52	.35	.60	.43	.28	.61	.48	.30	.65

*Adapted from Stier, L. D., A Comparison of Self-Evaluation, Peer Evaluation, Teacher Evaluation and Standardized Tests on Personality and Achievement Factors in the Fifth and Eighth Grades. Unpublished Ph.D. dissertation (Berkeley: University of California, 1948).

so close in judgments of "Freedom from Withdrawing Tendencies" and "Freedom from Anti-Social Tendencies." Other findings from the Stier study are included in subsequent sections.

In another unpublished study Bullock (4) asked 139 pupils of grades four, five and six to predict their report card marks on both "Citizenship" and academic achievement at the end of either two or three report card periods. "Citizenship" was defined on the cards as a group of fifteen work habits, health and safety habits and social habits closely related to the usual concepts of personality. Bullock found that, without instruction, pupils did not improve their abilities of self-estimate in relation to teacher estimate or test results. He found a statistically significant tendency for these pupils to underestimate their citizenship marks. He found a small positive relationship between predicting tendencies in citizenship with personal adjustment ($r = .24$) and with social adjustment ($r = .30$) but obtained a zero correlation between these factors and predicting tendencies in academic achievements.

The findings of these studies on self-evaluation of personality tend to corroborate the earlier study of Tschechtelin (37) based on an extensive sampling. Using a twenty-two trait personality scale with over 1500 children and 485 teachers in grades four to eight, Tschechtelin found a tendency for girls to overestimate themselves and for boys to underestimate themselves, although the latter tendency seems to decline with age. An unpublished study by Tuddenham (38) agrees that girls tend to overestimate their adjustments on paper but disagrees with Tschechtelin by finding that self-judgment becomes less favorable with age for both boys and girls. Bonney (1) also agrees that fourth grade girls rate themselves more highly than boys rate themselves on a group of personality factors.

Two other unpublished studies are related to the problem of how well children can evaluate their own personal-social adjustments. Although it did not involve self-rating, Fehlman (8) made a comparison of parents' and teachers' appraisals of children. In thirty-six cases studied by means of personal interviews, school records, and check-lists, she found an overlap of approximately one-third in items mentioned both by parents and teachers as satisfying qualities or problems in the same children. Teachers failed to mention a large number of traits which parents found desirable and, in the case of children having difficulty at school, teachers mentioned more problems than the child's parents. On the other hand, parents of the more maladjusted children mention more problems than these children's teachers do. Fehlman believes the child is more aware of what his parents think of him than of his teachers' attitudes in the matter. In the second study Gschwend (13) did not make direct use of self-evaluation but studied relationships between acceptance by the group, knowledge of selected concepts in democratic living, a test of democratic behavior and teacher ratings of citizenship in three fifth and sixth grade classes. Gschwend found correlations in the .60's and .70's between most of his sets of scores in this small group. For example, teacher ratings in citizenship correlate .75 and .69 with pupil acceptance and pupil recognition as measured by the Ohio scales. The children's knowledge of democratic behavior corrleated .73 with teacher citizenship ratings, .63 with his social acceptance, and .74 with scores on a behavior test of the democratic thing to do. These figures need to be verified in a more complete study, but because of the relationships he found Gschwend believes the teacher should make much more use of peer ratings and of knowledge of democratic behaviors in evaluating children's growth in "citizenship."

In summary, research indicates that children's self-evaluation of their development of habits and attitudes contained in some of the usual concepts of personality or "good citizenship" in school bears a positive but slight relationship to two other criteria of adjustment, teacher and peer ratings. The makers of self-rating personality scales have established adequate reliability for their tests but we must conclude either that the tests have little validity in terms of teacher and peer judgments or that school children have little or no ability to evaluate their own personality development. The studies indicate also a tendency for girls to overestimate and for boys to underestimate their adjustments in light of these criteria. No consistent explanation of this phenomenon has appeared, although it may be related to the greater satisfaction and achievement of girls in the usual school activities.

Self-Ratings of Academic Achievement

In the study described above, Stier (34) also attempted to determine the accuracy and realism of pupils in evaluating their academic achievement, in relation to their peers' and their teachers' estimates, and their actual scores on the Progressive Achievement Tests. He found that boys rated themselves lower than girls in achievement at both the fifth and eighth grade levels. This tended to be true of both self and peer ratings. In both grades both boys and girls showed a tendency to rate their own achievement higher than their peers rated it and significantly higher than their teachers rated it. As in the case of personality ratings, peer ratings and teacher ratings were in closer agreement than self-ratings and teacher ratings or self-ratings and peer ratings, except in the case of eighth grade boys. The relationships between the various ratings are shown in Table II. The table indicates clearly the close agreement between teachers' ratings and test results in the fifth grade only, and a tendency for self-rating to be less closely related to test marks than is teacher rating. It suggests, too, the importance of having junior high school teachers getting to know

TABLE II

CORRELATIONS OF VARIOUS RATINGS OF ACADEMIC ACHIEVEMENT FOR 144 FIFTH AND 135 EIGHTH GRADE PUPILS*

	Self-Peer	Self-Teacher	Self-Std. Test	Peer-Teacher	Peer-Std. Test	Teacher-Std. Test
Girls, Grade 5	.27	.36	.50	.68	.66	.85
Boys, Grade 5	.53	.54	.54	.67	.47	.72
Girls, Grade 8	.57	.40	.46	.62	.44	.44
Boys, Grade 8	.46	.61	.35	.41	.21	.43

*Adapted from Stier (34).

their pupils' achievements somewhat better or at least as well as the fifth grade teachers.

The Bullock study (4) also involved ratings of academic achievements. He also found that fourth, fifth and sixth grade pupils have a statistically significant tendency to rate themselves higher in reading, spelling and handwriting than their teachers rate them. He found, however, that there is a positive relationship between self-rating and test averages (r = . 52) and self-rating and teacher rating (r = . 47). Similarly in a group of 143 seventh and eighth grade pupils from an underprivileged community, and below average in intelligence, he found that the pupils tended to overestimate their achievement. However, these overestimates were rather cautious and the estimates showed a positive relationship with standardized test results (r = . 41). The pupils of highest intelligence tended to underestimate their achievement; the pupils of lowest intelligence to overestimate it.

In a group of fifth and sixth grade pupils Bonney (2) found that the estimate of such matters as spelling score, library book withdrawals and absences from school were completely accurate in 27 percent of the cases and approximately correct in about 43 percent of the cases.

In a published study involving 95 college students in psychology, Sumner (35) found that students tended to overestimate their marks in direct proportion to their poorness as students, with the best students showing a definite tendency toward underestimating their accomplishments. The tendency toward overestimation or underestimation may be fairly consistent, not only in terms of previous achievement, but also in relation to certain personality traits. This third area of research is considered below. As in the case of personality rating, we must conclude that elementary school children who have received no special instruction do not appraise their academic progress much like their teachers or peers do, although they may be fairly consistent in overestimating or underestimating their achievements.

Self-Evaluation and Socio-Economic Status

Two possible explanations of the consistent divergence between pupils' self-estimates and teachers' ratings may be found in the socio-economic status of pupils and in certain aspects of their personalities associated with their levels of aspiration.

In regard to the first factor, it has long been known that socio-economic status may affect school achievement. Shaw (31) summarizes seventeen studies published between 1911 and 1941, all of which show positive relationships between school achievements and socio-economic backgrounds. In his own study of children in the fourth to eighth grades, Shaw found correlations ranging from . 27 to . 41 between Sims scores of socio-economic status and various academic achievements.

In addition to actual achievement, social class may influence a teacher's judgment of a child's achievement and his personality. In several studies Davis and Havighurst (5) have shown the effects of social class influence upon personality development such as the aggressive, negative behavior of some lower class children and the ambitious, conforming conduct of middle class children. The middle class standards of most teachers tend toward the approval of the middle class behavior (39).

Socio-economic bachground affects peer judgments as well as teacher judgments. This is an expected result because of the similarity of teacher and peer judgments in the elementary grades as outlined above. Other studies, some of them summarized by McGuire and Havighurst (18), confirm the result. In an investigation of relationships between selection-rejection, social status and personality among sixth grade children Grossman and Wrighter (12) found that social standing was related to popularity but that the association ceased for levels above the middle class. In another study Neugarten (22) found that fifth and sixth grade children also express class values in the evaluation of their peers. Upper and upper middle class children were rated high by all other children on such traits as liking for school, leadership and friendship.

There seems to be sufficient evidence to warrant the conclusion that socio-economic class not only affects a child's achievements in school but also the opinions about his achievements and personality of both his peers and his teachers. The development of any program of self-evaluation in a school system must undoubtedly take these facts into consideration.

Self-Evaluation and Level of Aspiration

The studies quoted above deal with periodic rather than continuous self-evaluation and with group data rather than intensive study of individual self-appraisals. In the first area, little published research on the values of daily self-evaluation as part of the learning process seems available although an unpublished study by Schiesser (29), for example, indicates that emphasis upon pupil planning and evaluation pays dividends in the form of more democratic group behavior and larger individual gains in language abilities. In the second area, Bullock (4) included a study of individual cases and found some evidence that individuals consistently overrate or underrate their achievements. In his study, 60 percent of the elementary pupils who made three estimates of scholarship on report cards were consistently high or low, and 80 percent were consistent in their predictions of "citizenship." He found some evidence that personality and adjustment are related to predicting tendencies, especially in "citizenship."

In an earlier study of the validity of self-estimate in a group of adults Shen (32) found evidence that the apparent inaccuracy of self-evaluation is due to a consistent error, peculiar to the individual, "a systematic tendency to over- or underestimate himself in all traits, according to the kind of delusion he has about himself." In explaining a negative correlation between self-estimate and achievement in his study of incoming high school freshmen Mitchell (21) reported a "defensive mechanism set up by slow pupils." In her detailed study of thirty-six elementary pupils Sears (30) measured differences in what children said they would like to achieve and their actual measured success in school subjects. To explain differences she used the "level of aspiration" hypothesis developed by Lewin and others, which seems to have so many implications for the self-evaluation program. She found that aspiration slightly above achievement was the characteristic pattern of the consistently successful and secure individuals. This pattern shifted, however, with changes in the pupils' patterns of successes. She found too that most unsuccessful pupils had aspirations far above their achievement, goals which were unresponsive to mild fluctuations in their successes. Aspiration below achievement was characteristic of some of the unsuccessful children. Sears concluded that "academic security" and "personaliy structure" are both associated with level of aspiration.

More recently Rotter (27) has advocated the use of the level of aspiration concept as a method of studying personality. Frank (10) has summarized studies involving the level of aspiration concept and Klein and Schoenfeld (16) have shown that level of aspiration operates only in "ego-involved situations" which have intense personal significance for the individual. Because of the pressures for academic success that many pupils face from both teachers and parents and the status needs of most elementary school children the self-evaluation situation, whether continuous or periodic, is a highly charged situation in which the child's ego in involved. It would seem, from these and other studies, that self-evaluation in the school can be accomplished only in a setting which considers the child's adjustments and needs. Because he is the kind of child he is, the teacher can help him in certain ways to arrive at more adequate and realistic evaluations of his personal-social and his academic achievements.

Conclusion

The glib statement that self-evaluation is an important part of all evaluation programs would seem to need both further investigation and extreme caution in its application. This review of some published and unpublished studies indicates a lack of scientific study of the values of day-by-day evaluation in the learning activities of the modern school. It indicates further that the periodic evaluations of elementary school children, such as those sometimes used in reports to parents, bear little relation to the evaluations of peers and teachers in regard to both personality adjustments and academic achievements. This may mean that peers and teachers are wrong and the child is right. The evidence now available seems to indicate rather that the wise teacher can help children to improve their self-evaluations over a period of time, but that this help can be given only after consideration of a child's socio-economic status and aspects of his personality, particularly those factors associated with his level of aspiration.

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A RESEARCH ON WEIGHTS AND MEASURES

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THE QUESTION AS TO what should be taught in weights and measures can now be answered on the basis of research data. In general, we know that there is no justifiable drill program in weights and measures; that weights and measures facts committed in anticipation of probable use will be forgotten; and that, therefore, teaching should be on the basis of general information, appreciation, and the extension of experience.

Studies on the usage of measures in industry were made by Sala and Louth in 1931 and 1932, as masters' theses at Boston University. A sizable study on child and adult usage of weights and measures was made the basis for a master's thesis in 1936;[1] it involved 2,820 individuals—1,097 grade pupils, 961 junior and senior high school pupils, and 762 adults.

This was followed by a study by Cassell,[2] conceived on a national scale, and involving replies from 6,573 grade and high school pupils in 380 cities and towns scattered over 43 states and the District of Columbia.

Cassell's study was made in schools organized by the church in which she was recognized as an educational leader. It involved the cooperation of district superintendents and teachers. Teachers were provided with questionnaire blanks and were carefully instructed as to procedures and safeguards.

Part I of the Cassell questionnaire asked how each of the following is sold: farm land, potatoes, cotton lint, eggs, coal, nails, and wood. The illustrative example was butter, sold by the pound.

Part II of the questionnaire asked 12 questions, as follows:

Illustrative example: How many feet in a yard?

Answer: 3

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[1] Dorothy W. Wilson, Master's thesis, 1936. See also Dorothy W. Wilson, "Teaching Denominate Numbers and Measures," Educational Method, XVI (January, 1937), pp. 177-181.

[2] Mabel E. Cassell, What Measures Do Children Know and Why? Ph.D. dissertation (Boston: Boston University, 1941).

1. How many inches in a foot?
2. How many seconds in a minute?
3. How many cups of milk in a pint?
4. How many cubic inches in a cubic foot?
5. How many acres in a quarter section?
6. How many pounds in a bushel of wheat?
7. How many pennyweight in an ounce?
8. How many dozen eggs in a crate?
9. How many rods in a mile?
10. How many pecks in a bushel?
11. What is a good average yield of cotton per acre?
12. What is a good average yield of wheat per acre?

Part III of the questionnaire called for five dimensions, as follows:

1. Height of dining room table.
2. Height of ceiling of living room.
3. Distance between rails of railroad.
4. Glove size of average man.
5. Width of regular, full size bed.

After each answer, in an appropriate space, pupils were asked to place a number—1, 2, or 3—to indicate source of knowledge:

1. meaning "learned in school"
2. meaning "learned it from experience"
3. meaning "guessed"

Part IV of the questionnaire merely asked, "Were you taught the tables of weights and measures?"

Teachers were most cooperative. They saw that blanks were properly filled out. They answered letters later if inquiry was made about some answer that was outstanding or unusual.

Items in Section I of the questionnaire relate to commodities common in trade, some in all parts of the country. Weights and measures are valuable to the extent that they facilitate the exchange of commodities; this is their chief purpose. At what ages do children become conscious of various commodities and their measures; do they know local commodities better than others; are there differences in what rural and city children know; what is the school's part in knowledge possessed by children?

The 12 items of Section II relate to measures, some very common, some rare. Most of these were taught in school. Some, such as dozens of eggs in a crate or the yield of cotton per acre, were not taught in school; if known, the answers would come from experience.

Section III is a check on experience and observation, and, to an extent, judgment.

The 24 items of the total questionnaire, as noted above under Parts I, II, and III, are exceedingly simple. There was interest and understanding, as indicated by cordial cooperation and the high percentage of returns, namely 72%.

Table I gives a quick summary of the returns on the Cassell study. It is taken from page 45 of her dissertation,[3] and shows the number of the 6,573 children sending in returns who answered each item either correctly or with a fairly good estimate.

Table II is taken from page 112 of the Cassell study and shows on a percentage basis the comparison of city and rural children; and also the comparison of boys and girls. It will be noticed that differences between rural and city children are small. This would mean that in a wheat country, for example, the town people are nearly as well informed as the country people. And in like manner, the girls are about as well informed as the boys. On the other hand, there are marked sectional differences.

In Table III, taken from page 73 of the Cassell study, the comparison and contrast on correct or reasonable answers for city versus rural children is carried out with greater statistical refinements.

Table IV is taken from page 43 of Cassell's study. It shows the total number of different answers for each item of the questionnaire, the most common answer, the percentage which this is of the total number of answers. This is a very interesting table, and will repay careful study. It will be noticed that the most common answer is not always the correct answer, and that percentages agreeing on the most common answer are frequently very low. For example, only 12.5% gave the correct answer for pounds of wheat in a bushel (II-6); the average yield of wheat (II-12) was much too high; the height of a dining room table (III-1) is not 3 feet, but 30 inches.

The sectional differences on knowledge of weights, measures, and commodities as developed in the Cassell study are shown in a separate table on each of the 43 states. Sectional differences on knowledge of measures applied to localized commodities are very great.

Sectional contrast on knowledge of how cotton lint is sold is shown in another of Cassell's tables, in which responses are distributed by states. In New Mexico 64.3% of the city children know how cotton lint is sold, and 64.7% of the rural children know. On the other hand, only 15.2% of Connecticut children know the correct answer for cotton lint; in the District of Columbia, the percentage in 8.3%.

An item like II-7, pennyweight in an ounce, learned in school and

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[3] On file with the Office of Education, Washington, D.C., and at the School of Education, Boston University.

TABLE I

THE NUMBER AND PERCENTAGE OF THE 6,573 CHILDREN WHO GAVE CORRECT OR REASONABLE ANSWERS ON THE 24 ITEMS OF THE CASSELL QUESTIONNAIRE

	Correct or Reasonable Answers	Percent Correct or Reasonable
I - 1. Farmland, unit of sale	6021	91.6
I - 2. Potatoes, unit of sale	6211	94.5
I - 3. Cotton lint, unit of sale	1812	27.5
I - 4. Eggs, unit of sale	6261	95.2
I - 5. Coal, unit of sale	5484	83.4
I - 6. Nails, unit of sale	4512	68.5
I - 7. Wood, unit of sale	4020	61.2
II - 1. Inches in a foot	5973	90.8
II - 2. Seconds in a minute	5695	85.8
II - 3. Cups of milk in a pint	4633	70.5
II - 4. Cubic inches in a cubic foot	1078	16.4
II - 5. Acres in a quarter section	547	8.2
II - 6. Pounds in a bushel of wheat	824	12.5
II - 7. Pennyweight in an ounce	244	3.7
II - 8. Dozens of eggs in a crate	405	6.1
II - 9. Rods in a mile	937	14.2
II - 10. Pecks in a bushel	3832	58.2
II - 11. Average yield of cotton per acre	309	4.7
II - 12. Average yield of wheat per acre	704	10.7
III - 1. Height of dining room table	553	8.3
III - 2. Height of living room ceiling	2508	38.1
III - 3. Width between rails of railway	1280	19.4
III - 4. Glove size of average man	2113	32.1
III - 5. Width of a full size bed	366	5.6

TABLE II

CORRECT OR REASONABLE ANSWERS OF BOYS AND GIRLS IN CITY AND RURAL AREAS ON A PERCENTAGE BASIS

	City (4246)		Rural (2327)	
	Boys (1969)	Girls (2277)	Boys (1205)	Girls (1122)
I - 1. Farmland, unit of sale	91.4	90.5	93.3	92.2
I - 2. Potatoes, unit of sale	94.6	95.1	93.3	92.2
I - 3. Cotton lint, unit of sale	26.7	25.5	28.8	31.8
I - 4. Eggs, unit of sale	96.8	96.0	94.0	91.2
I - 5. Coal, unit of sale	84.8	79.7	89.0	82.1
I - 6. Nails, unit of sale	77.2	59.3	73.9	67.0
I - 7. Wood, unit of sale	61.3	56.5	65.8	65.1
II - 1. Inches in a foot	93.1	89.7	91.9	88.1
II - 2. Seconds in a minute	92.0	85.9	80.6	85.1
II - 3. Cups of milk in a pint	72.1	68.4	70.8	71.6
II - 4. Cubic inches in a cubic foot	18,4	15.6	16.6	14.2
II - 5. Acres in a quarter section	9.9	6.1	11.3	6.9
II - 6. Pounds in a bushel of wheat	14.1	8.3	20.1	10.4
II - 7. Pennyweight in an ounce	3.4	3.2	4.6	4.3
II - 8. Dozen eggs in a crate	5.2	4.1	9.7	8.1
II - 9. Rods in a mile	14.7	12.8	16.8	13.7
II - 10. Pecks in a bushel	60.6	55.9	58.8	58.6
II - 11. Good average yield of cotton per acre	5.1	3.4	7.1	4.1
II - 12. Good average yield of wheat per acre	11.9	8.3	14.8	9.1
III - 1. Height of dining room table	8.5	8.1	8.9	8.5
III - 2. Height of living room ceiling	44.6	32.9	40.2	34.3
III - 3. Width between rails of railroad	26.1	12.3	27.5	13.6
III - 4. Glove size of average man	32.7	31.8	32.4	31.7
III - 5. Width of full size bed	6.3	5.1	4.7	5.9

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*Copy supplied from Washington copy of Cassell study by A. Elizabeth Du Rant, Summer Session student, University of Vermont.

TABLE III

THE PERCENTAGE OF CORRECT ANSWERS FOR THE 43 STATES AND THE DISTRICT OF COLUMBIA, CITY AND RURAL, WITH THE PROBABLE ERROR FOR EACH AND THE PROBABLE ERROR OF THE PERCENTAGE DIFFERENCE

	City		Rural			
	4246	P. E. of Percent	2327	P. E. of Percent	%age Differ.	P. E. of %age Differ.
I - 1. Farmland, unit of sale	90.9	.29	92.8	.35	1.9	.45
I - 2. Potatoes, unit of sale	94.8	.23	93.8	.34	1.0	.41
I - 3. Cotton lint, unit of sale	26.1	.45	30.3	.64	4.2	.61
I - 4. Eggs, unit of sale	96.3	.19	93.1	.35	3.2	.39
I - 5. Coal, unit of sale	86.4	.39	88.9	.49	2.5	.63
I - 6. Nails, unit of sale	67.6	.48	70.6	.64	3.0	.80
I - 7. Wood, unit of sale	58.8	.51	65.5	.66	6.7	.83
II - 1. Inches in a foot	91.3	.29	90.1	.42	1.2	.51
II - 2. Seconds in a minute	88.7	.33	82.8	.53	5.9	.62
II - 3. Cups of milk in a pint	70.1	.47	71.2	.63	1.1	.79
II - 4. Cubic inches in a cubic foot	16.9	.39	15.4	.50	1.5	.63
II - 5. Acres in a quarter section	7.8	.28	9.2	.40	1.4	.49
II - 6. Pounds in a bushel of wheat	10.9	.16	15.4	.50	4.5	.53
II - 7. Pennyweight in an ounce	3.3	.18	4.5	.29	1.2	.34
II - 8. Dozen eggs in a crate	4.6	.22	8.9	.39	4.3	.45
II - 9. Rods in a mile	13.7	.35	15.3	.50	1.6	.61
II - 10. Pecks in a bushel	58.1	.51	58.7	.69	.6	.86
II - 11. Wheat yield per acre	4.2	.21	5.6	.32	1.2	.38
II - 12. Cotton yield per acre	9.9	.31	12.0	.45	2.1	.55
III - 1. Height of dining room table	8.3	.29	8.7	.39	.4	.49
III - 2. Height of living room ceiling	38.4	.50	37.3	.67	1.1	.84
III - 3. Width between rails of railroad	18.7	.40	20.7	.57	2.0	.69
III - 4. Glove size of average man	32.2	.48	32.1	.65	.1	.80
III - 5. Width of full size bed	5.7	.24	5.3	.31	.4	.39

TABLE IV

THE TOTAL NUMBER OF DIFFERENT ANSWERS AND THE MOST COMMON ANSWER ON THE VARIOUS ITEMS OF THE MEASURES QUESTIONNAIRE FROM 6573 PUPILS FROM THE 43 STATES AND THE DISTRICT OF COLUMBIA

	Total No. Differ. Answers	Most Common Answer	No. for Most Common Answer	%age for Most Common Answer
I - 1. Farmland, unit of sale	36	acre	6020	91.5
I - 2. Potatoes, unit of sale	52	pound	2255	34.3
I - 3. Cotton, unit of sale	76	pound	1812	27.5
I - 4. Eggs, unit of sale	22	dozen	6082	92.5
I - 5. Coal, unit of sale	56	ton	4980	75.8
I - 6. Nails, unit of sale	69	pound	3940	59.9
I - 7. Wood, unit of sale	79	cord	2656	40.4
II - 1. Inches in a foot	27	12	5973	90.8
II - 2. Seconds in a minute	39	60	5695	85.8
II - 3. Cups in a pint	31	2	4633	70.5
II - 4. Cubic inches in a cubic foot	218	1728	1078	16.4
II - 5. Acres in a quarter section	162	160	547	8.3
II - 6. Pounds in a bushel of wheat	139	60	824	12.5
II - 7. Pennyweight in an ounce	76	16	352	5.4
II - 8. Dozen eggs in a crate	121	12	1288	19.4
II - 9. Rods in a mile	406	320	937	14.2
II - 10. Pecks in a bushel	59	4	3832	58.2
II - 11. Average yield of cotton per acre	416	1 bale	177	2.7
II - 12. Average yield of wheat per acre	402	60 bu.	112	1.7
III - 1. Height of dining room table	205	3 feet	1524	21.6
III - 2. Height of living room ceiling	259	8 feet	736	11.2
III - 3. Width between rails of railroad	251	3 feet	886	13.5
III - 4. Glove size of average man	228	size 8	480	7.3
III - 5. Width of full size bed	357	4 feet	613	9.5

never used, shows uniformly only a small percentage of correct answers.

Table V is one of three tables in the Cassell study which help the reader to study the effects of maturity on ability to give correct answers to the various items in the measures questionnaire. For each item of the three sections of the questionnaire, the trend is an upward one from the lower to the higher grades. It is evident that maturity is a vital factor in the measures known and used. Cassell adds, "Doubtless maturity and experience are more closely connected than maturity and schooling." The drop in the ninth grade in correct or reasonable answers on item II-6, pounds in a bushel of wheat, may be explained by the fact that of the 86 ninth grade pupils, 67 were from the city and only 19 from the country. This might also explain the drop in the ninth grade on items II-8, dozen eggs in a crate, and II-10, pecks in a bushel.

The Cassell study of children's knowledge of common measures and commodities is crowded with significant details. For example, item III-1 calls for the height of a dining room table. Since most children sit at a table three times each day, it is reasonable to expect good replies on this item. There were 205 different answers; the majority of the answers are in terms of yards, feet, or inches. The range for inches in from 1 to 100, for feet from 1 to 400, and for yards from 1/2 to 13. The most common answers are:

	3 feet	4 feet	$3\frac{1}{2}$ feet	$2\frac{1}{2}$ feet
Number	1524	427	373	341
Percent	21.6	6.5	5.7	5.2

The only correct answer in 30 inches ($2\frac{1}{2}$ feet) and this answer carries a very small percentage.

Cassell's comment is, "It is evident that children have not been taught to develop clear concepts of units of distance and to apply them to objects that are encountered daily." (p. 58)

Cassell's study may be considered as a culminating study on measures, following many minor studies—Mitchell, 1918; Wilson, 1919; Wise, 1919; Woody, 1922; Bowden, 1929; Traniello, 1930; Sala, 1931; Louth, 1922; Dorothy Wilson, 1936. These studies had reasonably well established the conclusion that experience is the chief factor in a usable knowledge of weights and measures.[4]

As a result of her study, Dr. Cassell came to these conclusions on measures and denominate numbers:

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[4] For fuller references, see Guy M. Wilson, et al., Teaching the New Arithmetic (New York: McGraw-Hill Book Company, 1951).

1. Experience is the factor that makes a difference.
2. Teaching of tables of measures as such is not worthwhile; there is little carry-over into life experiences.
3. The same commodity may be sold in different units in different sections of the country.
4. Most of the teaching of weights and measures has been ineffective. The percentage of correct or reasonable answers is exceedingly low. Clear concepts are lacking. If the work on measures in the schools had been omitted entirely, the results apparently could have been little different. Such work as the committing of tables of weights and measures, reductions ascending descending, and compound denominate numbers, have little, if any, place in business and may without loss be eliminated from the school program.

Conclusions[5]

What then should be the program of the schools? Evidently, the only thing to do is to extend the experience of the child. Adults do not go about using measures promiscuously; they use them only when the need arises. They buy and sell in units; they occasionally measure something or estimate in units. If our teaching were to follow a similar pattern, it would mean that the child would be led into a knowledge of commodities and then the units would be applied to those commodities as needed. However, the teacher should not get the wrong impression on this point. There is apparently no advantage in going beyond experience; there is no point in teaching the average northern child the number of pounds in a bale of cotton. He will forget it promptly and is not to be blamed for so doing. On the other hand, children who live with cotton, plant it, cultivate it, pick it, ride the load of seed cotton to the gin, and ride back again with a bale of cotton, have the experience basis for this knowledge, and so it remains with them without any effort on their part.

The other thing that the schools may do is to lead the child to develop clear objective concepts of simple measuring units. The child should be able to estimate the length and width of a room; he should be able to pace with a fair degree of accuracy a given distance. The viewpoint here is somewhat that of the boy scout, learning to do in a

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[5] These conclusions are quoted with slight changes from pp. 241-242 of the 1939 edition of Teaching the New Arithmetic. Based upon several previous studies on measures, they are now fully supported by the Cassell study of usage of measures.

TABLE V

THE DISTRIBUTION BY GRADES OF THE PERCENTAGE OF ANSWERS THAT ARE CORRECT OR REASONABLE ON SECTIONS I, II, AND III OF THE QUESTIONNAIRE, CITY AND RURAL COMBINED, FOR THE FIVE SELECTED STATES, VIZ., MASSACHUSETTS, MINNESOTA, OHIO, TEXAS, AND WASHINCTON

Number in Each Grade:*	137	144	171	211	202	215	86
Grade:	3	4	5	6	7	8	9
I - 1. Farmland, unit of sale	72.9	83.3	93.5	95.7	95.0	95.3	97.6
I - 2. Potatoes, unit of sale	82.4	93.0	94.7	96.6	98.5	98.6	100.0
I - 3. Cotton lint, unit of sale	25.5	20.8	31.5	31.4	32.6	33.9	29.1
I - 4. Eggs, unit of sale	84.6	94.4	97.0	97.6	97.5	99.0	100.0
I - 5. Coal, unit of sale	63.5	83.3	90.0	92.4	93.5	93.9	95.3
I - 6. Nails, unit of sale	52.5	61.8	71.9	81.0	79.2	80.9	80.2
I - 7. Wood, unit of sale	35.7	51.4	56.1	70.1	77.4	80.4	83.7
II - 1. Inches in a foot	84.6	81.9	92.4	94.7	95.5	98.1	98.6
II - 2. Seconds in a minute	53.2	63.8	83.6	93.3	97.5	98.1	100.0
II - 3. Cups in a pint	54.0	56.9	64.9	72.5	69.3	73.9	68.3
II - 4. Cubic inches in a cubic foot	0.0	.7	8.1	13.2	20.7	27.9	16.2
II - 5. Acres in a quarter section	0.0	0.0	2.3	3.8	4.4	8.8	18.3
II - 6. Pounds in a bushel of wheat	2.9	3.4	7.6	11.3	14.3	24.1	20.9
II - 7. Pennyweight in an ounce	0.0	.7	4.1	2.3	2.9	1.9	1.2
II - 8. Dozen eggs in a crate	.7	2.8	4.1	6.1	7.9	10.7	9.5
II - 9. Rods in a mile	1.4	9.0	5.8	17.0	21.7	24.6	23.2
II - 10. Pecks in a bushel	11.5	35.4	50.2	61.6	62.8	65.1	54.6
II - 11. Average yield of cotton per acre	0.0	2.1	4.1	8.5	5.4	13.0	15.1
II - 12. Average yield of wheat per acre	0.0	1.4	5.8	14.2	21.2	26.4	30.2
III - 1. Height of dining room table	2.1	4.8	2.9	8.5	13.3	7.9	10.4
III - 2. Height of living room ceiling	6.5	12.5	29.8	52.8	54.9	60.4	69.6
III - 3. Width between rails of railroad	.7	3.4	15.2	15.7	19.3	28.3	38.1
III - 4. Glove size of average man	12.2	14.5	21.6	29.8	47.5	55.8	63.9
III - 5. Width of full size bed	0.0	0.0	1.7	3.3	5.4	8.8	12.8

*Pupils in grades 2 and 10 are omitted from this percentage table because of small numbers.

practical way. The schools should direct the child in doing things that are useful.

Beyond the development of experience and the building of clear concepts for practical use, our teaching should follow the appreciation technique. The committing of tables in unprofitable. Reductions are unprofitable. Addition, subtraction, multiplication, and division of compound numbers should be omitted from course requirements and from all tests.

This simpler program will be a matter of great relief to the child. Many textbooks develop manipulation in the measures and denominate numbers through hundreds of pages.[6] The process is meaningless to the child at the time; the results are promptly forgotten. The time so spent has been wasted or, at least, very unprofitably employed.

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6. Agnes G. Gunderson (University of Wyoming, "Measurement in Arithmetic Textbooks for Grade 3," *Mathematics Teacher*, XXXV (March, 1942), pp. 117-121. Twelve series of arithmetics were analyzed; shows impossible loads for grade 3 children.

UNDERSTANDING OF TIME RELATIONS OF FIVE-, SIX-, AND SEVEN-YEAR-OLD CHILDREN OF HIGH IQ*

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The Problem and Its Importance

THE PURPOSE OF this investigation was to find by means of a question-type test the understanding of time relations by five-, six-, and seven-year-old children of high IQ and to discover any relationship that may exist between understanding of time relations and (1) chronological age, (2) mental age, or (3) sex.

Time is an important concept used in the lives of children. It is an abstraction. The concept is developed through indirect perceptual experiences. By this is meant that a child has a number of experiences, often unrelated in themselves, that have the common factor of time. From these experiences the child extracts the time elements with which he gradually develops his concepts or understanding of time.

By way of contrast, the child in developing the concept or meaning of "hot" has the advantage of direct sensory impression. By association with hot stoves, radiators, sun, etc., the child can more immediately and definitely develop the concept or meaning of "hot." Time is not perceived directly in this way.

When one considers that the education of children is more meaningful through concrete and sense appeal than through the abstract, the difficulties experienced by the child in comprehending time are evident.

The investigator specifically studied high IQ children for time understanding. This level of intelligence has been the last to receive educational attention as a group. Thus, the investigation contributes bases for guidance of high IQ children in time situations both in school and out. Further, in probing the cues, or reasons, for time understanding, the investigation opens a new approach to time problems for all children.

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Method and Procedure

Questionnaire. —A questionnaire consisting of 27 questions with two parts each was given individually to 75 children of high IQ. The questionnaire was designed so that the first part of a question required a factual answer, e.g., "What day is today?," and the second part required a cue answer, e.g., "How do you know today is Monday?"

The questionnaire itself was divided so that Part I consisted of ten questions with two parts about present time and Part II consisted of seventeen questions with two parts about past, future, and complex time.

Scores for the answers to the factual part of each question were found by adding up those correct for each child. These scores were used in comparing factual performance within C. A., M. A., and sex groups. The answers to the cue questions (the second part of each question) were classified in ten categories. These were used in comparing cues within the C. A., M. A., and sex groups.

Subjects. —The subjects of the study were 75 children in the Hunter College Elementary School in New York City. This is a school for the mentally "gifted." The IQ average of the groups in this investigation was 145 or slightly higher. From the 75 children, three groups were selected. One group included three levels of chronological age. Another was made up of the two sexes. The third group included several levals of mental age.

Any one group compared with any other group was equated for IQ. For example, the average IQ of the male group did not show any significant difference from that of the female group when the sex groups were compared with each other in every aspect of the investigation. Thus, the IQ was comparable within the chronological-age levels, between the sexes, and within the mental-age groups.

The three chronological-age groups consisted of the five-year-olds, the six-year-olds, and the seven-year-olds. The five-year-old group was made up of children whose ages included four years, ten months, through five years, nine months. The six-year-old group consisted of those whose ages ranged from five years, ten months (inclusive), through six years, nine months. The seven-year-old group was composed of those whose ages ranged from six years, ten months (inclusive), through seven years, nine months.

There were 22 children in the five-year-old group, 25 in the six-year-old group, and 24 in the seven-year-old group.

Of the sexes, there were 32 boys and 37 girls.

The mental age divisions were arranged by referring to all 75 scores achieved on the total questionnaire. It was found that the 75 scores could be arranged from the highest to the lowest in groups of 15 with comparable IQ's. These groups were used in comparing scores and cues on the total questionnaire. For comparison of Part I and Part II of the questionnaire, it was feasible to divide the M. A. into three groups of 25 rather than five groups as was done for the total questionnaire comparisons.

The mental-age groups resulting from arranging the total scores in descending order were 9. 6, 9. 7, 9. 2, 8. 9, 8. 5. The highest scoring M. A. group (9. 6 M. A.) did not differ significantly from the next group (9. 7 M. A.). The groups were retained as two, however, because of score difference and to keep the subjects of equal number in each group for analysis.

The mental-age groups arranged in groups of three from the test (questionnaire) scores on Part I were 9. 7, 9. 3, 8. 6, whereas the groups arranged from the test scores on Part II were 9. 5, 9. 4, 8. 7.

Treatment of Data. —The data consisted of 4, 050 answers given by children studied. Half of these answers were factual, and the other half were cues.

Scores for the questionnaire and for each of the two parts were found for the factual questions. The means, standard deviations, and standard error of the means were found for the three age groups, the sex groups, and the mental-age groups.

Difference between the means were calculated for the total questionnaire and for Part I and Part II for the age groups, the sex groups, and the mental-age groups. The standard error of the difference between the means was calculated.

Throughout, the critical ratio (t-score) was used to test if there were significant differences in group results, IQ's, and other measures.

Coefficient of correlation between Part I and Part II of the total questionnaire for the total population of 75 was found.

The percent of children answering each question correctly and incorrectly was found for the C. A. groups, the sex, and five M. A. groups.

The cue answers were classified in ten categories. Analysis of the cues was made to find percentage of cues used by the C. A., sex, and five M. A. groups.

Analysis of cues was made to determine if the time-sense cues were specific or general (in relation to the question asked).

A comparison was made of cue answers given by those at the tails of the score distribution.

Throughout the analysis, statistical formulas used were those of the small sample theory because of the small number of subjects in each group studied.

Findings and Conclusions

1. The highest total score obtainable on the factual part of the questionnaire was 27. Of the chronological-age groups, the five-year-olds had a mean score of 13.9, the six-year-olds had 20.6, and the seven-year-olds had 19.9. The difference in scores was significant between the five-, and six-year-olds as well as between the five-, and seven-year-old groups. The difference in scores however was not significantly different between the six-, and seven-year-old groups.
2. The highest score obtainable on Part I (present time) was 10. Of the chronological-age groups, the five-year-olds had a mean score of 5.5, the six-year-old group had 9.0, and the seven-year-old group had 8.4. Again, the differences were significant between the five-, and six-, and five-, and seven-year-old groups but not between the six-, and seven-year-old groups.
3. On Part II (past, future, complex time) the highest obtainable score was 17. Of the chronological-age groups, the five-year-olds had a mean score of 8.4, the six-year-olds had 11.7, and the seven-year-olds, 11.5. Again, the differences were significant between the five-, and six-, and five-, and seven-year-old groups but not between the six-, and seven-year-old groups.
4. The results above seem to indicate a growth of time understanding between the five-, and six-year-old levels but not between the six-, and seven-year-old levels. The reason for this lack of growth is not obvious. A plateau in development within a group is not natural. Several possible reasons for the plateau were considered. The questions used for the test may have been inadequate for testing the seven-year-old group. The six-year-old group answered many questions with such a high percentage of accuracy that there remained little room for improvement for the seven-year-old group.

There is the possibility, too, that the seven-year-old group was experimenting with the use of more mature cues to give factual answers. They gave incorrect answers by using a new means of arriving at the answer. As a substantiation of this it was noted that both the five- and six-year-olds used ten types of cues, whereas the seven-year-olds used only nine types. The cue eliminated by the seven-year-olds was one based on irrelevancy. Although this cue was used by less than 1 percent of the five- and six-year-old groups, its use indicated a lack of maturity.

While the percentages of differences were very small in difference of use of the remaining nine cues, the over-all picture of percentages used by the six- and seven-year-old groups shows that the seven-year-olds tended to use slightly more of a sequential approach to time, a preconceived idea as to what the time answer should be, and a tendency to generalize on the total test (questionnaire).

For example, the sequential approach cue was used 30 percent of the time by the five-year-olds, 45 percent by the six-year-olds, and 46 percent by the seven-year-olds. In reference to the preconceived idea cue, the five-year-olds used it .7 percent of the time, the six-year-olds used in .6 percent, and the seven-year-olds, 2 percent. This cue required a reference to another event and a relating of the time situation under question to it. This thinking is involved and mature.

Further reference to the over-all pattern use of cues showed a slight decrease by the seven-year-old group (as compared with the six-year-old group) in relying on word of others, in claiming absolute knowledge of the answer, and in depending on external factors. Thus, on total test, the five-year-old group used word of others 20 percent of the time, the six-year-old group used it 19 percent, and the seven-year-old group, 18 percent. In using an absolute claim to knowledge the five-year-old group referred to it 4 percent of the time, the six-year-old, 3 percent, and the seven-year-old group, 1 percent.

The use of external factors decreased very slightly between six- and seven-year-olds. Reference to this cue was made 6 percent of the time by the five- and six-year-old groups and 5 percent by the seven-year-old group.

The indefinite cue was used 31 percent of the time by the five-year-old group, 11 percent of the time by the six-year-olds, and 13 percent by the seven-year-old group. This cue largely covered the answer, "I don't know." The slightly higher percentage of use by the seven-year-old group may be a further indication of experimenting with mature cues. The seven-year-old group did not resort to the irrelevant at all or to as high a claim to undemonstrated knowledge as the six-year-old group did. It is possible the seven-year-olds' percentage represented a more realistic approach to some questions.

5. In reference to achievement by the sexes on the total questionnaire and on Part I (present time) and Part II (past, future, complex time), the scores were almost the same. These scores were found significantly the same when subjected to the t-test.

On the total test, the boys' mean score was 18.2; the girls' was 18.0. On Part I, the boys' mean score was 7.8; the girls', 7.5. On Part II, the boys' mean score was 10.4; the girls', 10.3.

In the use of cues there was a difference in percentage of 1 percent or less in eight cues. In the use of the two remaining cues there was a difference of 5 percent or less. The latter differences were in use of the sequential and indefinite cues. Since the scores and the use of other cues were so similar, these differences were not considered outstanding. The scores and use of cues indicated there were no unusual differences in the knowledge of and the approach to time understanding.

6. The mental-age groups that had been found by arranging scores from the highest to the lowest scores showed an increase in scores up to a certain point. On the total test the 8. 5 M. A. group achieved a score of 11. 1; the 8. 9 M. A. group, a score of 15. 6; the 9. 2 M. A. group, a score of 18. 9; the 9. 7 M. A. group, a score of 21. 9; and the 9. 6 M. A. group, a score of 24. 7. The last two groups did not have significantly different mental ages but did have significantly different scores.

The reasons for the similarity of M. A. but difference in scores for the two highest groups were not clear. An examination of the 9. 6 and 9. 7 M. A. groups shows that the higher scoring group (9. 6) was chronologically younger and therefore may have been brighter. There is a possibility, again, that the test was inadequate in measuring upper mental-age levels. Further, the 9. 6 and 9. 7 M. A. groups may have been in an experimental period of development in reference to cues used. For example, the 9. 6 M. A. group used 54 percent of sequential cue whereas the 9. 7 group used 48 percent, and the 9. 7 group used the cue based on measurement 15 percent of the time whereas the 9. 6 group used it 12 percent.

It was found for Part I (present time) that there was a significant increase in score with increase in mental age. Of the three mental-age groups arranged for this analysis the 9. 7 group had a score of 10. 0, the 9. 3 group had a score of 8. 6, and the 8. 6 group had a score of 4. 8.

For Part II (past, future, complex time), there was no significant difference inthe mental age of the two higher groups, though the scores were different. In the 9. 5 M. A. group the score was 14. 1, in the 9. 4 M. A. group the score was 10. 6, in the 8. 7 M. A. group the score was 7. 2. The plateau stage presented by the 9. 5 and 9. 4 M. A. groups for this part of the test would be explained with the possibilities set forth above for the results of the upper groups on the total test.

7. The cues labeled and classified in this investigation were found by assembling the 2, 025 cue answers given by the 75 children studied. The answers naturally grouped themselves in ten categories on ten types of cues. The cues were assigned a descriptive name. The sequential cue included answers that showed a child used sequential arrangement of time periods when he answered factual questions. The word-of-others cue showed that the child depended on someone's telling him something in reference to a time situation. The records-or-measurement cue revealed that the child turned to a clock, calendar, etc., for his answer to a time problem. In the absolute cue the child claimed he just knew without demonstration. In the external-factors cue the child looked for characteristcs that may or may not be fundamental to time, e. g., if a child is tall, he is old. The indefinite cue was one in which the child said he did not know or said something si-

milar. The knowledge cue was one in which the child claimed know
edge and gave some indication that he had a definite approach, e.g.
"I keep track of the days." The preconceived-idea cue was one wh
in the child said he knew the factual answer because of another eve
e.g., "Washington's birthday is in February; yesterday was Washi
ton's birthday; this must be February." The generalization cue wa
one in which the child gave a general answer, such as, "It seems a
long time ago." The irrelevant cue included the imaginative and th
illogical.

The cues used most frequently by all groups were sequential, wo
of-others, indefinite, and records-or-measurements. The cue of e
ternal factors was drawn on frequently by all groups.

The least used cues by all groups were the irrelevant, generaliz
tion, and preconceived-idea.

Cues used to a medium frequency were claim-to-knowledge and
appeal-to-the-absolute.

Cues were affected by chronological age and mental age but not b
sex. The younger groups, both chronological and mental, relied or
less independent cues. They used frequently the word-of-others an
the indefinite. The older groups, both chronological and mental, te
ed to use cues that indicated growing independence in approaching ti
problems. These cues included the sequential and records-or-measurements. There was a decrease in use of word-of-others (by old
groups).

The cue reported most frequently as a basis for correct answers
was the sequential whereas the indefinite cue was the one used most
for the incorrect answers.

The word-of-others cue was used by all groups to an important f
quency, especially for questions that involved past, future, and com
plex time situations (Part II of test). It was used to a much less de
for present time (Part I of test).

All groups, sex, chronological age, mental age (with the excepti
of 9.6, highest scoring group), used more types of cues to answer
Part II (past, future, complex time) of the test than to answer Part
(present time).

The oldest chronological-age group and the two highest scoring
groups with the highest mental ages used fewer types of cues on the
total test than other groups.

8. Analysis of percentages of correct and incorrect answers by
groups showed that time questions that involved the personal, the in
mediate, the exactly repetitious were better answered and answered
more correctly at a lower chronological and mental age than questio
that involved the remote, the nonpersonal, the occasional, the long
periods of time, the complex time, and the variable repetitious. Ex
amples that led to these conclusions were the 100 percent correct a

swers given by the five-, six-, and seven-year-olds to questions about the child's own age, his age next birthday, and the 92 to 100 percent correct answers to the question of time to go home from school, whereas in the same groups 41 percent or less knew how long until Christmas and 40 percent or less knew how long they were in school daily.

9. The total number of cues used by the children in any group investigated was found to be on anaverage of 5.3 to 5.8 per child.

10. This investigation extends the knowledge of children's time understanding. It specifically shows results of a high IQ group. It suggests the importance of cues as a developmental phase of children's approach to time problems. The investigation of cues throws some light on time perceptions that children have in developing time understanding.

A COMPARATIVE INVESTIGATION OF DIFFERENCES IN PERSONALITY ADJUSTMENT OF DELINQUENTS AND NON-DELINQUENTS

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THE INVESTIGATION OF personality of juvenile delinquents has been the concern of a number of comparative studies. The method of comparing delinquent and non-delinquent personality has been to discover, if possible, areas in which the delinquent individual deviates from the "normal." With a knowledge of deviant trends in the personality, it would enable us to gain greater insight into delinquent behavior and help make possible the reorientation of the individual into healthier and more socially accepted channels.

Schuessler and Cressey report that 113 studies have been conducted on the personality of the criminal, with a considerable number concerned with juvenile delinquents. They find that 47 or only 42% of the studies reveal a differentiation between the criminal and "normal" individual (1:447). This shows that the evidence has not proven decisive with respect to whether there are or are not differences in the area of personality. It is the hope of the present investigation to add additional evidence about this problem of personality differences.

Operational definition of juvenile delinquent. —For the purposes of this investigation, the term "juvenile delinquent" is defined as an individual of legal school age who has been transferred to a special rehabilitational school because of his detremental school conduct. In Chicago, the Board of Education maintains the well known Montefiore School for Problem Children for these cases. The detection of the delinquent in the schools, however, does not imply that the causation lies within the schools, as it is well known that delinquency is the outcome of a multiplicity of factors.

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How this study differs. —The present investigation differs, as far as the writer can determine, in that the population used for this study includes three defined comparison groups, instead of the usual single "non-delinquent" group.

Population. —The population used in this study consisted of 130 seventh grade boys and girls from four Chicago public elementary schools. This population was broken down into four categories, namely, delinquents (N = 30), upper socio-economic class non-delinquents (N = 37), middle socio-economic class non-delinquents (N = 23), and lower socio-economic class non-delinquents (N = 40). The mean IQ ratings (Kuhlmann-Anderson) for the four categories indicate that all four groups were of "normal" intelligence. The subjects were all Caucasian in racial composition. The delinquent category was selected from entering pupils at the Montefiore School. The other categories, those of differing socio-economic status, were determined by selecting school children from schools in well differentiated areas of Chicago. The selection was made through the Division of Child Study, Chicago Board of Education, from among those principals who were willing to cooperate in this investigation.

Measuring instrument. —In this investigation the instrument used was the California Test of Personality: A Profile of Personal and Social Adjustment, Intermediate, Form A.

Limitations and cautions in interpretation. —Certain limitations may have been in effect even though a concerted effort was made to eliminate as many as possible. In the determination of the several schools, selective factors may have been operating in the willingness of the principals to cooperate, and also in the selection of the particular seventh grade class in each school. Although the foregoing is a possibility, the investigator has no evidence of such being the case.

The disparity of boy-girl ratios in the four groups may have caused an error due to possible sex differences. On this point the California Test Bureau, the publishers of the test used in this study, state that when the test was "published and a new set of data obtained from over a thousand pupils in grades 4-8. . . , there was a tendency, possibly significant in two or three of the components, for girls' responses to average slightly higher than those of boys. However, subsequent use of the test reveals many instances in which such trends did not appear. . . ." (2:12)

There are at least three restrictions or limitations which relate to the interpretation of the conclusions. First, the procedures used do not justify conclusions concerning causality. Second, the conclusions are valid only to the extent to which the test is valid and a reliable measure of what it purports to measure. Third, the conclusions made are justifiable only for the population from which the sample was taken or for similar populations.

Results. —The results of this investigation are tabulated in Tables I to III. The results show that the mean score differences between the delinquents and non-delinquents favor the non-delinquent groups except in one subtest for the middle class non-delinquents, Freedom from Anti-Social Tendencies, where the reverse was true. In order to determine the significance of these differences, the critical ratios were obtained.

The critical ratios for the upper class non-delinquents clearly show the greatest disimilarity to the delinquents. In eleven of the twelve subtests and in the totals, the critical ratios were well above the .01 level of significance, thus refuting the null hypothesis. However, in the area of Community Relations the level of significance fell somewhat below the accepted .05.

Turning to the lower socio-economic non-delinquents we find nearly similar results. All the Self Adjustment subtests have a high significance level. On the subtest, Freedom from Anti-Social Tendencies, the lower socio-economic group does not show a significant difference from the delinquents. Family Relations are significantly different at the .05 level.

The critical ratios for the middle socio-economic group are substantially lower than either the upper or lower socio-economic non-delinquents. We find that seven of the subtests are below the .05 level of significance. And as mentioned above, in the area of Freedom from Anti-Social Tendencies, the mean differences favored slightly the delinquent group; however the critical ratio was not significant. Only two areas have critical ratios above 3.00, namely, Feeling of Belonging and Social Standards.

From the evidence presented here, the non-delinquent group which least resembled the delinquents were the upper socio-economic, closely followed by the lower socio-economic group, and the group most nearly resembling the delinquents in personality adjustment was the middle class non-delinquents.

An important facit of this investigation may help to explain the reason for negative results found in many previous studies. If we obtain the critical ratios between the middle socio-economic group and the lower and upper socio-economic groups, we find the following results. The critical ratios for the lower and middle socio-economic groups for Total, Self, and Social Adjustment are 2.96, 3.11, and 2.63, respectively. For the upper and middle groups they are respectively 3.21, 2.78, and 3.62. All of these are significant at the .01 level and would seem to indicate that the differences between the middle, and the upper and lower groups are as significant as for the delinquents and these groups. The critical ratios for the lower and up-

TABLE I

CRITICAL RATIOS OF THE MEAN DIFFERENCES BETWEEN UPPER SOCIO-ECONOMIC NON-DELINQUENTS AND DELINQUENTS

(All Mean Differences Favor Non-Delinquents)

Test Component	Mean Difference	S. E. Difference	C. R.	Level of Confidence
1. Self Adjustment	16.92	2.76	6.15	.01
A. Self Reliance	2.51	.56	4.48	.01
B. Sense of Personal Worth	2.57	.67	3.74	.01
C. Sense of Personal Freedom	2.61	.64	4.07	.01
D. Feeling of Belonging	3.08	.55	5.60	.01
E. Withdrawing Tendencies (Freedom)	3.60	.60	6.00	.01
F. Nervous Symptoms (Freedom)	2.56	.61	4.19	.01
2. Social Adjustment	14.79	2.58	5.73	.01
A. Social Standards	3.55	.55	6.45	.01
B. Social Skills	2.10	.57	3.68	.01
C. Anti-Social Tendencies (Freedom)	2.15	.67	3.20	.01
D. Family Relations	2.38	.72	3.30	.01
E. School Relations	3.40	.64	5.31	.01
F. Community Relations	1.23	.69	1.78	Below .05
Total Adjustment	31.74	4.85	6.70	.01

TABLE II

CRITICAL RATIOS OF THE MEAN DIFFERENCES BETWEEN LOWER SOCIO-ECONOMIC NON-DELINQUENTS AND DELINQUENTS
(All Mean Differences Favor Non-Delinquents)

Test Component	Mean Difference	S. E. Difference	C. R.	Level of Confidence
1. Self Adjustment	15.99	2.48	6.44	.01
A. Self Reliance	3.02	.59	4.25	.01
B. Sense of Personal Worth	2.79	.68	4.10	.01
C. Sense of Personal Freedom	2.69	.55	4.89	.01
D. Feeling of Belonging	3.40	.50	6.80	.01
E. Withdrawing Tendencies (Freedom)	2.09	.63	3.31	.01
F. Nervous Symptoms (Freedom)	2.01	.68	2.95	.01
2. Social Adjustment	12.31	2.78	4.42	.01
A. Social Standards	2.96	.57	5.19	.01
B. Social Skills	2.70	.56	4.82	.01
C. Anti-Social Tendencies (Freedom)	1.04	.72	1.44	Below .05
D. Family Rleations	1.60	.75	2.13	.05
E. School Relations	3.32	.63	5.26	.01
F. Community Relations	1.69	.62	2.72	.01
Total Adjustment	28.29	4.87	5.80	.01

TABLE III

CRITICAL RATIOS OF THE MEAN DIFFERENCES BETWEEN MIDDLE SOCIO-ECONOMIC NON-DELINQUENTS AND DELINQUENTS

(All Mean Differences Favor Non-Delinquents Except as Noted)

Test Component	Mean Difference	S. E. Difference	C. R.	Level of Confidence
1. Self Adjustment	7.46	2.48	3.00	.01
A. Self Reliance	1.43	.67	2.13	.05
B. Sense of Personal Worth	1.30	.76	1.71	Below .05
C. Sense of Personal Freedom	1.02	.70	1.45	Below .05
D. Feeling of Belonging	2.34	.58	4.03	.01
E. Withdrawing Tendencies (Freedom)	1.22	.81	1.50	Below .05
F. Nervous Symptoms (Freedom)	.19	.84	.22	Below .05
2. Social Adjustment	7.69	3.00	2.56	.05
A. Social Standards	1.94	.63	3.07	.01
B. Social Skills	1.70	.64	2.65	.01
C. Anti-Social Tendencies (Freedom)	.71*	.92	.77	Below .05
D. Family Relations	1.30	.72	1.80	Below .05
E. School Relations	1.83	.70	2.61	.01
F. Community Relations	.23	.74	.31	Below .05
Total Adjustment	15.20	5.55	2.73	.01

*Mean difference favored delinquent group.

per groups are respectively for Total, Self, and Social Adjustment, .27, .11, and .74; this indicates that there are no significant mean differences. From this data one can formulate some conclusion concerning previous studies. Our hypothesis is then that in many delinquent-non-delinquent personality investigations, socio-economic class differences have obscured the relationship between delinquents and non-delinquents. If delinquents were compared to middle class non-delinquents we should find little or no significant differences in many areas of adjustment. Our data tend to support this. It should not, however, be inferred that the causes for maladjustment are the same for both cases. The causation for the middle class child may be an overly strict child rearing program, whereas for the delinquent it may be a combination of adverse primary and secondary group relationships coupled with a poor environmental situation. The resemblance between the lower and upper groups in personality adjustment could be explained in part by a freer and less restricted child rearing program followed by parents of both lower and upper socio-economic classes. The hypothesis proposed here will require further investigation to determine its adequacy.

Conclusions. – The following conclusions seem to be warranted. First, that there are decidedly significant differences in personality adjustment between delinquents and non-delinquents, and second, that in previous studies these personality differences may have been obscured by socio-economic differences.

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A REVIEW OF A DECADE OF EXPERIMENTAL STUDIES WHICH COMPARED METHODS OF TEACHING ARITHMETIC

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THIS REVIEW IS concerned primarily with a summary of experimental investigations reported from 1940-1950 which compare methods of teaching arithmetic.

Approach

In order to locate experimental investigations which compared methods of teaching, a study was made of periodical indexes, reviews of research, and bibliographies found in books and articles on the teaching of arithmetic. Eight of nine experiments were available to the writer for this review.[1] The reports were studied from the sources designated in the bibliography with the exception of (2) where reference was also made to the monograph.

These experiments were each carefully analyzed for experimental interests, procedures, and results. Similarities in these studies were noted. In each analysis the following points were considered: (a) nature of problem; (b) methods of teaching compared; (c) the experimental setting—nature of subject matter, grade level, number in experiment, length of experiment; (d) methods of evaluation; and (e) significant conclusions.

Review of Studies

Nature of Problem. —Two studies (1), (5) were concerned with the comparative merits of instructional method for greater achievement. Anderson (1) set out to investigate the hypothesis that learning which emphasizes understanding and generalization is more effective than learning which emphasizes separate elements of knowledge and skill. Harding and Bryant (5) compared results of teaching by means of

[1] Not included was E.L. Nicholson, *Comparison of Two Methods of Teaching Arithmetic in Grades 1, 2, 3.* University of Pennsylvania, 1943.

functional procedures as in experience and activity, raising the question whether pupils taught through functional procedures attain as high achievement on standardized measures of computation and reasoning as pupils taught by formalized drill methods.

Swenson (7), (8) was not only concerned with learning but directly with its effect upon a specific topic when she investigated the effectiveness with which children learned basic addition combinations under three different teaching plans: (a) drill, (b) generalization, and (c) drill-plus. Brownell investigated two problems (2), (3) concerned with "borrowing" in subtraction. The earlier study (2) made before this period but summarized during the 1940-1950 decade, was concerned with the value of the "crutch." The second study (3) compared relative merits of two commonly known procedures, decomposition and equal additions, for "borrowing" in subtraction.

Guiler and Edwards (4) set out to discover the extent to which computational habits of junior high school students may be improved by means of a systematic program of individualized instruction. Johnson (6), also concerned with individual learning difficulties, purposed to determine whether improvement in specific mathematical vocabulary leads to an improvement in the solution of problems which involve the use of these specific mathematical terms, or stated interrogatorily, what effect does the learning of mathematics vocabulary have upon the solution of numerical problems in which these words play an important part.

Methods of Teaching Compared. —In each of the studies the control group was taught by the drill method. This method was defined in much the same manner in each investigation, that is, the textbook presentation or the presentation of each concept as an isolated idea by "rule of thumb." Variation was found in the meaning methods used in the experimental groups. In (1), (7), and (8) the pupils were encouraged to discover arithmetical relationships and generalizations for themselves, referring to concrete objects as aids in solving the abstract number combinations. Swenson made a further distinction between the generalization or meaning method and a method she termed as drill-plus which she defined as a concrete presentation of "size of sum" with no opportunity given for generalization. Brownell (3) gave emphasis to the insight of the system of ideas, principles, and processes of arithmetic as did Anderson (1) and Swenson (7), (8). In (3), however, these understandings were developed by means of a series of graded activities beginning with the manipulation of concrete materials and ending with the use of the abstract symbols. In (2), Brownell emphasized meaning by means of the "crutch" to help in the thought process of "borrowing" in subtraction. In (4) the group and individual plans for remedial work, studied by Guiler and Edwards, were concerned with the analysis of individual problems. Harding and Bryant (5) defined meaningful arithmetic instruction through the media of personal experiences and selected mathematical activities as a means for developing and mastering the arithmetical concepts. In (6), Johnson felt that meaning in the particular study of vocabulary was found through daily, oral drill on selected words, individual use of the dictionary, individual student notebooks, and mimeographed instructional materials and drills.

The Experimental Setting. —(a) Nature of Subject Matter. Studies (4), (5), and (6) used the textbook page by page assignment in their control groups. Guiler and Edwards (4) selected materials to meet the needs of each child in their experimental group. The experimental group in Harding and Bryant's study (5) based their work on activities of timely interest to the group and of value for developing quantitative thinking. Johnson (6) used supplementary mimeographed materials and drills as basis for his meaningful instruction. For both control and experimental group, Anderson (1) used the topics of the particular period in the fourth grade, Brownell (2), (3) used the subject of "borrowing" in subtraction, and Swenson (7), (8) used the 100 addition facts.

(b) Grade Level. It was found that these studies distributed themselves in the following manner: studies (1) and (5) were made in 4th grade; (2) and (3) with 3rd grade; (4) with 7th and 8th grades; (6) with 7th grade; and (7) and (8) in the 2nd grade.

(c) Number. For this comparison the number completing each study was considered. It was found that groups ranged from 64 to 898. Studies (1), (3), (7), and (8) used from 328 to 389 children, (4) used 412 children, (2) used 590 children, and (6) used 898 children. Study (5) used 64 children but the investigator felt this number was inadequate.

(d) Length. The length of the experiments varied from 9 weeks to 24 weeks. Nine weeks were used for (2) and (3); from 14 to 18 weeks were used for (5), (6), and (7); and 20 weeks or more were used for (1), (4), and (8).

Methods of Evaluation. —In reviewing the methods of evaluation used in these studies, attention was given to the factors held constant and variable but not to all the particular tests and statistical measures used.

I. Q. in (2) and M. A. in (7) and (8), in addition to the initial test for each of the three, were held constant, gains or losses being measured between the initial test and succeeding tests. Study (1) used a statistical tool in controlling school ability as measured by a test and the results on an arithmetic pretest in studying performances on quantitative relationships. Statistical means were used in (3) in matching groups to take care of the multiple factors, C. A., M. A., I. Q., and rate and accuracy in computation. Pairing pupils into two equivalent groups by means of identical scores or within one point of test score was used in (4). This test score was obtained on an Analytical Survey Test in Computational Arithmetic. Groups in (5) were compared by I. Q. ratings alone, growth being measured by comparing computational ability, reasoning ability, social adjustment, and emotional stability. In (6) factors equated were chronological age, mental age, four abilities measured by Analytical Scales of Attainment, reading ability, knowledge of arithmetic vocabulary, nationality, and occupation of father.

Conclusions. —Anderson (1) found that the two methods of learning had a different effect for pupils of different levels of intelligence and initial achievement. Too, if effectiveness was judged by recall of knowledge and skill, there was little support to the hypothesis that learning which emphasizes understanding is more effective than learning which emphasizes discreteness of elements of knowledge and skill. There was, however, support if effectiveness was judged by the extent to which this hypothesis could be applied in appropriate situations.

Brownell (2) found that the "crutch" met the test of fostering sound learning and thus recommended its use in "borrowing" in subtraction. As pointed out, the significance would no doubt vary with the feelings of the reader. In (3) he confirmed the superiority of equal additions (EA) over decomposition (D) when both are taught mechanically and favored the teaching of "borrowing" by (D) rather than (EA) when (D) is taught rationally, and when understanding and ability to transfer are regarded as important learning factors. It was found that (EA) was difficult to teach at the level of functional understanding. Brownell brought out an important implication in this study; that is, rather than considering the process of "borrowing," consideration should be given to the learning outcomes to be achieved in teaching "borrowing."

In (4) Guiler and Edwards found that the individual group instruction based on individual diagnosis was more effective than the conventional group instruction. Furthermore, they found that some phases were more difficult to improve, that intelligence and initial status in computational ability had a marked effect on improvement in computation, and that increasing the length of the class period did not produce a corresponding change.

Harding and Bryant (5) found that direct, first-hand experiences with projects and activities in which children have a personal interest proved more effective than the vicarious experiences and drill procedures. Also, it was effective in developing computational skill, in meeting the requirements of the course of study, and in being a possible program within the limits of the regular arithmetic class period.

Johnson (6) found that the use of instructional materials in mathematical vocabulary led to significant growth in the knowledge of specific terms included, but that it did not tend to bring about a general improvement in arithmetic learnings. Too, there was no evidence of transfer of learning.

Swenson (7) found that the comparative difficulty of addition facts was to some extent a function of learning method. In the more inclusive study (8) the method of meaningful generalization was significantly superior in number of combinations learned, in retention, and in transfer to untaught addition items and untaught subtraction combinations.

A Concluding Statement

The eight studies here summarized were concerned with ways for more effective learning of arithmetic. The investigators sought answers to this problem through studies of relationships and generalizations regarding arithmetical concepts, through studies of the media of children's personal experiences, and through analysis of individual pupil needs. In conducting these experiments, the studies have been quite evenly distributed throughout the grades, paired and equated group techniques have been used, and an attempt has been made to hold constant various factors, one being that of mental ability.

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SPANISH WORD COUNT OF THE SUPERIOR EDUCATIONAL COUNCIL OF THE UNIVERSITY OF PUERTO RICO

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THE SUPERIOR EDUCATIONAL Council of Puerto Rico has just finished the publication of its *Spanish Word Count*, a book that will undoubtedly be welcomed by teachers, school directors, and writers of school textbooks in the Spanish speaking countries. It will be useful to those who teach Spanish as a second language as well as to those who teach it as the vernacular. In it the modern techniques used in vocabulary counts were applied to the Spanish language.

Vocabulary lists are numerous in English, and include such well known counts as E. L. Thorndike's *The Teacher's Wordbook of 20,000 Words*, and Thorndike and Lorge's two volumes, *The Teacher's Wordbook of 30,000 Words* and *Semantic Count of English Words*. There are also extensive lists in English by Horn, Rinsland and Eaton, to mention only a few.

Lists from the German, French and Portuguese languages have been made, and word counts from Indian dialects, such as Kannada, Marati, and Hindustani, also exist. However, until now, the only Spanish word count worthy of mention was that prepared by Professor Milton A. Buchanan.[1] It includes a total of 1,200,000 running words obtained mostly from dramas, novels, biographies, poetry, folklore, travel books, technical and periodical literature, and literary criticism. Buchanan's word count, useful as it is, has the drawback of coming almost wholly from literary sources. It lacks vocabulary obtained from the radio and from oral conversation.

Samples from such sources as modern religious literature, sports, news, and comic strips are either absent or included in limited amoun In fact, very few of the standard word counts in any language give them any representation.

To compensate for this shortcoming was one of the objectives borne in mind in undertaking this Spanish word count at the University of Puerto Rico. In addition, we had the following more immediate aims:

1. To give adequate representation to oral vocabulary and

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[1] Milton A. Buchanan, *A Graded Spanish Word Book*.

to the vocabulary of contemporary scientific developments.
2. To help in the establishment of vocabulary norms for writing readers adapted to the needs of Spanish speaking children, in general, and of Puerto Rican children in particular.

Back in 1942 the Superior Educational Council of Puerto Rico was created by the Insular Legislature to help orient education in the island and to act as a governing body for its university. One of the immediate undertakings of this newly created body was to conduct a study of the educational facilities of the island. The study revealed a serious condition in the reading materials used in the elementary schools. The books were scarce, poor in content, old fashioned in many technical aspects and written with no idea whatsoever of the need of graded vocabulary. The research conducted revealed that this condition was true not only of the books used in the schools of the island, but in most of the Spanish speaking countries as well.

There was, and there still is, a need for elementary school readers written according to the acceptable norms of vocabulary graduation. But such norms are nonexisting in Spanish. We had, therefore, to devise our own. Accordingly, to start at the very bottom, the Spanish word count was begun.

The sampling for the count was carried on in the different agricultural, industrial, and geographic regions of the island. Coffee, tobacco, sugar cane and minor crops areas were covered, as well as the manufacturing districts, the coast plains and mountains, and the cities and towns of different sizes.

From the beginning it was agreed to include the vocabulary of expression and recognition of elementary school children from grades one through six, as well as the vocabulary of the texts for basic and supplementary reading used by them. The vocabulary of expression was obtained from four different sources: spontaneous conversation, free and controlled associations, written compositions, and a previous word count of the written compositions of elementary school children started some years ago by two professors from the University of Puerto Rico, but never brought to an end.

The first source of expressional vocabulary was the children's own talk. Experts in lexical studies of different languages know the value of conversational speech in the preparation of vocabulary lists. Nevertheless few of them have included it to any considerable degree in their counts because of the cost and difficulties involved in obtaining reliable samples.

A group of teachers and members of the staff of the Superior Educational Council of the University of Puerto Rico visited a considerable number of schools from different parts of the island. Shorthand notes were taken and wire recordings made of the conversation of elementary school children in the school playgrounds and corridors and in formal classes in the schoolrooms. Longhand transcriptions were made afterwards of the oral vocabulary collected in this manner.

Both free and controlled associations were employed as means to secure additional spontaneous speech. Vocabulary obtained by the process of associations is apt to be poor in connectives and prepositions, adverbs and verbal forms other than the simple present, past, and future indicative. This is a shortcoming when the lists are used separately. However, when merged with other lists, the effect is reduced to a minimum.

Written compositions were obtained from the children following essentially the same procedure employed by Rinsland.[2] Originality, authenticity and legibility were the chief factors taken into consideration in selecting the compositions to be tabulated.

Vocabulary was obtained also from 91 issues of several newspaper including the two having the widest circulation in the island. From these newspapers the editorials, sport news, society news, news summaries, comic strips, and advertisements were utilized for the count.

Nearly half a million running words were obtained from radio programs taken directly by means of shorthand and wire recordings. Th radio stations gave us access to their script files, from which we selected quite a few programs for our study. The programs included news and commentaries, comic sketches, sport news, public participation and amateur programs, talks, forums, soap operas, commercials, women's programs, religious programs, and programs for children.

Vocabulary was also obtained from the literature of the various religions prevalent in the island: Catholic, Protestant and Spiritualist. Several newspapers, pamphlets, leaflets, Sunday School manuals, a Catholic catechism and a Spiritualist prayer book were tabulated to secure nearly 300,000 running words.

Vocabulary presumably representative of different grades was obtained from 98 basic and supplementary readers now used in the public elementary schools of the island and in several South American countries. The vocabulary employed in these books was arbitrarily chosen for those grades according to the individual judgment of the author.

A summary of the different sources used and the total number of words derived from each source is given in Table I.

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2. Henry D. Rinsland, A Basic Vocabulary of Elementary School Children, pp. 7-9.

TABLE I

SOURCES USED AND THE TOTAL NUMBER OF WORDS DERIVED FROM EACH

Source	Total Number of Words Tabulated
I. Vocabulary of expression	
1. Oral vocabulary	1,073,245
2. Free and controlled association	926,404
3. Written composition	803,622
4. Rodriguez and Casanova's Word Count	586,141
Total	3,389,412
II. Vocabulary of recognition	
5. Newspapers	1,050,000
6. Radio	465,600
7. Religious material	295,422
8. Buchanan's Word Count	1,200,000
Total	3,011,022
III. Vocabulary proper for the elementary grades according to the individual judgment of authors of textbooks	
9. Basic readers	255,569
10. Supplementary reading books	410,634
Grand Total	7,066,637

The methods, techniques and procedures employed in the preparation of the Spanish Word Count of the University of Puerto Rico are discussed in several of the appendices of the book. The introduction contains a rather extensive account of the historical development of vocabulary lists, as well as an enumeration of the several uses to which they may be put. The authors point out the different purposes which these lists prepared in Puerto Rico may serve. They emphasize their contribution in helping to solve those educational problems of the island and of Spanish speaking countries in general which spring from the scarcity and uneven quality of the reading textbooks in Spanish now in use in the local elementary schools.

In financing the publication of this Spanish word count UNESCO and OAS hope to contribute in a positive way to the improvement of reading materials in Spanish America. They are thus offering educators in those countries where the educational problems are similar in nature to those of Puerto Rico an instrument of work in their vernacular planned and carried out by Puerto Rican educators with technical advice offered at times by fellow educators from the United States.

Several of the sources from which vocabulary was obtained for this word count—radio programs, school readers, newspapers and children's magazines, and religious materials, besides Buchanan's Count—included material from many Spanish speaking countries. This will help to counterbalance any possible preponderance of the peculiarities of Puerto Rican Spanish on the final lists. Furthermore regionalisms, neologisms and other words not recorded in the standard Spanish dictionaries are indicated in the text. These facts, among others, should give Spanish speaking educators confidence in using the lists for their sundry teaching purposes. The count, although made in Puerto Rico, samples the Spanish language in general.

Besides incorporating what is best in the vocabulary lists already in use in different languages and avoiding many of their pitfalls, both in technique and scope, the Spanish Word Count of the University of Puerto Rico adds the two important features of its wide sampling of contemporary communications and millions of words taken from children's oral expression.

ATTITUDES OF HIGH SCHOOL STUDENTS TOWARD NEGRO PROBLEMS

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Purposes and Background

DURING THE YEARS 1945-46 and 1946-47 the New York State College for Teachers at Albany, New York, was one of the participants in the College Study in Intergroup Relations which was sponsored by the American Council on Education and financed by the National Conference of Christians and Jews, under the direction of Lloyd A. Cook. This study is one of several projects undertaken at that time by the college's faculty committee on intergroup education.

The purpose of this study was to determine the attitudes toward the Negro of adolescents in different types of schools and in groups within the schools determined by age, sex, intellectual level, and cultural background. This particular set of attitudes was chosen for investigation because of the widespread concern among educators concerning prejudice toward the Negro. It was felt that such an investigation, by revealing what attitudes were characteristic of various adolescent groups, might yield clues as to causes of prejudice and offer some suggestions as to how an attack upon prejudice might be made more effective.

Subjects and Setting

The schools which were asked to join in the project represented different types as to purposes and group characteristics of their student bodies. School A is a private girls' school; nearly all of the pupils have American-born parents; there is a mixture of Protestants, Catholics and Jews; the economic level is high. School B is a consolidated village-rural public school; Protestants predominate; the economic level is good; nearly all parents of the students are American-born. School C is the campus school in connection with the teachers college; there is a larger percentage of Jewish children in this school than in the other schools, but the majority are Protestant. School D is a large city public school; it has many children with foreign-born parents and many with poor economic backgrounds; there is a mixture of religious groups and this is the only one of the schools that has Negro students; its average mental level as measured by intelligence tests is lower than that of the other schools; also, many of the students are over-age. Since each teacher taught two sections, eight classroom groups were involved; these are designated as AX, AY, BIX, BIY, CX, CY, DX, and DY respectively. There were 103 boys and 106 girls involved in the study.

The following groups were considered important from the standpoint of cultural background and so designated: children whose parents were born in this country (old-stock Americans), O; children, one or both of whose parents were foreign-born (new-stock Americans), F; Jewish Americans, J; Negro Americans, N. The classifications are functional rather than logical. The study was limited to the tenth grades in the various schools. Pupils were considered under-age if they were more than a year younger than 15 years, 2 months, which is the expected age for this group, and over-age if they were more than a year older. Children with IQ's of 90-110 were considered average in intelligence; those above this level, high; those below, low.

Procedures

The evaluation technique used in the study was a part of the Social Problem Analysis, Advanced Series,[1] which deals with attitudes toward Negro problems. There are four subdivisions of the test: (1) reasons for delay in attacking the problem; (2) scope of the problem; (3) what to do about the problem; (4) hope of progress in solving the problem. The scoring values were obtained by combining the judgments of the teachers involved in the study with those of the members of the faculty committee on intergroup education at the College. In addition, a data sheet was filled out for each child in the study, giving age, nationality, race, religion, birthplace of parents, father's occupation, economic background, mental level, and other identifying data.

Analysis and Findings

The analysis that follows is in terms of groups determined by school, sex, cultural group, age, and intelligence of pupils. At this point it should be emphasized that there are factors that limit conclusions to be drawn from the analysis of data obtainable in this field. Techniques are still highly experimental; also, there are many influences playing upon children. However, it seems practical to start with what one has, realizing its limitations, and use findings as clues, not final proof.

Average scores of schools on attitude toward Negro problems were:

[1] This is a mimeographed test obtained from the Bureau of Educational Research, Ohio State University.

A, 40.6; BI, 39.6; BII, 39.9; C, 40.4; D, 38.3; all, 39.7. For differences among the groups, an average difference of 1.0 gives t = 1.95; this is the 5% level of confidence. Schools A, B, and C did not differ significantly in attitude toward Negro problems. There was, however, a significantly more favorable attitude toward Negro problems in these three schools than in School D.

The average scores by sex were: 103 boys, 39.3; 106 girls, 40.3. This is a significant difference; girls appeared to have more favorable attitudes toward Negro problems than did boys. Table I gives attitudes of cultural groups by sex.

There were only three Negroes, too few to separate by sex. The Jewish American group had the most favorable score and the old-stock American group the next most favorable; the new-stock American group had the least favorable score. Although it had the least favorable score, the Negro group is too small to warrant any conclusions. The difference in score between the old-stock and Jewish American groups is not statistically significant; the differences between the scores of these two groups and that of the new-stock Americans are significant.

Scores by age groups were as follows: normal, 171 pupils, 40.1; over-age, 38 pupils, 38.7; the difference is 1.4, which is statistically significant. There were no under-age pupils. Nearly all of the over-age pupils were in School D. Evidence of this study is that children of normal age have more desirable attitudes on Negro problems than do over-age children.

Scores made by intelligence groups are shown in Table II. Children of high intelligence had more favorable attitudes on the Negro problem than did those of average intelligence; the low intelligence group was probably too small in number to warrant any conclusions. At the high intelligence level there appeared to be no sex difference; there was a significant sex difference at the average intelligence level, indicating that girls at this intelligence level had a more favorable attitude than boys.

Findings of the study may be summarized as follows:

1. Schools A, B, and C showed more favorable attitudes toward Negro problems than did School D, which was the only school with any Negro students. Also, School D has a definitely lower economic background for its students than do the other schools; its average intelligence test score is lower; it has a much higher percentage of over-age children.
2. Girls appeared to have more favorable attitudes toward Negro problems than did boys. This difference was not evident at the upper intelligence level.
3. Old-stock Americans and Jewish American students did not differ significantly in their attitudes toward Negro problems;

TABLE I

AVERAGE SCORES ON SOCIAL ANALYSIS PROBLEMS BY CULTURAL GROUPS

Cultural Group	Boys		Girls		Total	
	No.	Score	No.	Score	No.	Score
O	83	39.8	76	40.2	159	40.1
F	14	36.4	16	40.2	30	38.5
J	5	39.3	12	41.3	17	40.8
N					3	36.7

TABLE II

AVERAGE SCORES ON SOCIAL ANALYSIS TEST BY INTELLIGENCE GROUPS

Intelligence Group	Boys		Girls		Total	
	No.	Score	No.	Score	No.	Score
High	43	41.5	48	41.5	91	41.5
Average	39	36.3	44	39.6	83	38.1
Low	5	39.4	4	41.3	9	40.4

both of these groups showed significantly more favorable attitudes in this area than did new-stock Americans.

4. Children of normal age showed more favorable attitudes toward Negro problems than did those who were over-age. However, since most of the over-age children were in School D, which is the one with the lower economic background for students, the factors are not clear-cut. This suggests the desirability of further investigation where there is more realistic association among majority-minority groups and the necessity of separating the factors of economic background and age from such a study.
5. Children of high intelligence had more favorable attitudes toward Negro problems than did those of average intelligence.

In conclusion, the best clue suggested by these data appears to be the following hypothesis: New stock Americans who are over-age and of low intelligence and who come from economically meager backgrounds have the least favorable attitudes toward Negro problems. The data in this study support the hypothesis suggested by Dollard,[2] Hayes,[3] Williams,[4] and others that individuals who are themselves socially maladjusted tend to be most prejudiced.

[2] John Dollard, et al., Frustration and Aggression (New Haven: The Institute of Human Relations, Yale University Press, 1939), Chapter III.

[3] M. L. Hayes, "Personality and Intergroup Attitudes," Journal of Educational Research, XLIII (October, 1949, and November, 1949), p. 122 and 197.

[4] Robin M. Williams, The Reduction of Intergroup Tension (New York: Social Science Research Council, 1947).

WHY VETERANS CHANGE REGISTRATION IN COURSES*

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AT THE UNIVERSITY of Minnesota a system of early registration is employed to ease the burden of the various offices from a peak load at the beginning of each quarter. The majority of students in residence take advantage of this opportunity to register early. Some changes in registration take place, however, before or shortly after classes begin. These changes are due to the cancellation of a course by a department because of insufficient enrollment, a change of mind of the students, or various other factors.

The purpose of this study was to inquire into the reasons why veterans change registration and to answer related questions. Some of the questions proposed were:

1. To whom may we ascribe veterans' enrollment in classes they later cancel?
2. Are course cancellations due to faulty academic guidance and to a lack of guidance?
3. Are cancellations due to poor planning on the student's part?
4. Does late receipt of books and supplies have an effect on course cancellation?
5. Would the veteran cancel if he had to stand the loss on books for the cancelled course himself?
6. Would the veteran have gone ahead with the cancellation if it had meant a reduction in subsistence?

In an attempt to answer these questions each veteran student who cancelled a course was asked to complete a questionnaire giving his

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*The author wishes to acknowledge the work done by Mr. Gerald Howe, counselor in the Bureau of Veterans' Affairs, in devising the questionnaire and supervising the checking of returns during the winter quarter, 1949. Acknowledgement is also made to Dean E. G. Williamson and the staff of the Bureau of Veterans' Affairs.

TABLE I

STATEMENTS FROM QUESTIONNAIRE WITH RANK AND NUMBER OF REPLIES

Statement	Winter		Spring	
	N	Rank	N	Rank
1. It was more difficult than I thought it would be	49	7	70	7
2. I found that I was well acquainted with the material presented in the course	24	11	18	15
3. The class met at the wrong time of day or caused a conflict	104	3	129	3
4. I didn't like the instructor	26	10	39	9
5. A prolonged illness caused me to fall too far behind	11	15	23	12
6. I didn't quite know how to study for this course	13	13	19	14
7. I didn't like the methods used in teaching the course	39	9	47	8
8. The course didn't cover the material I thought it would	53	5	76	6
9. I took the course to fill in because I couldn't get the course I originally needed and wanted—and then found it too difficult to continue	18	12	26	11
10. I was behind in all courses and I decided that I would cancel my least important course to lighten my load	52	6	110	5
11. I registered for this course by mistake	97	4	37	10
12. Because of unfavorable study conditions where I live, I didn't get much studying done.	12	14	22	13
13. I discovered that I didn't have the necessary ability or background to continue	122	2	113	4
14. I was too nervous to stand such a load	8	16	8	16
15. I discovered that there was a course I could more profitably take in place of the one I am now cancelling	196	1	143	2
16. Other: (Please specify on reverse side of questionnaire)	48	8	160	1

reasons for cancelling the course or courses. The questionnaire was designed so its tone would not give the student a negative attitude or undesirable impression toward cancellation, but rather to afford the student with a reasonably wide choice of reasons from which to choose. The questionnaire tacitly admitted that a course might be cancelled for justifiable reasons and that perhaps an increased insight or better self-understanding would result through this action.

Various identifying data were asked for, such as the student's class and college. In order to form a standard basis for tabulating the reasons for course cancellation, a number of statements were set forth which the student could check. According to members of the counseling staff these were typical explanations for course cancellation. There were fifteen statements presented as choices to correspond with the student's reason for cancelling the course. In item sixteen the student had an opportunity to give any reason which he felt was not categorized in the previous statements.

The statements included in the questionnaire, of which one or more could be checked as reasons for cancellation, are shown in Table I with the number of replies and rank of the statement for each of two quarters.

From this distribution it appears that stated reasons 15, 13, and 3 are the most popular. In the spring quarter item 16 was checked most frequently. This would indicate that the majority of veterans had reasons for cancelling courses other than those listed. If the categories from 1 through 15 had been more closely scrutinized by the veterans who replied to the questionnaire, they could very likely have chosen one of them instead of writing out the reason in their own words under item 16.

In attempting to answer some of the questions set forth at the beginning of this study, the information given in Table II is set forth.

From these data we may assume that most of those who cancelled a course also added a course. The added course in nearly half the cases was to take the place of the course which was cancelled in order that the full course load minimum of twelve credits could be met. An inspection of Table II reveals that 2/3 of the veterans received texts by the time classes began.

It appears that more than half the veterans who cancelled courses did so with no thought of the course load minimum requirement in order that they could continue to draw the full subsistence allowance.

Approximately 90 percent of the veterans who complete the questionnaire stated that they would not have continued in the course even if they had acquired the texts at their own expense. Friends seemed to have very little influence on the courses in which veterans enrolled and cancelled. Advisers exerted a little weight in the determination of courses but the veteran himself seemed to be the one who made

TABLE II

RESPONSES TO RELATED QUESTIONS

	Winter		Spring	
	N	Percent	N	Percent
Added as well as cancelled a course	567	88	413	54
Did not add a course	75	12	346	46
Received books by the time school started	416	63	464	64
Did not receive books for the course by time school started	249	37	263	36
Would have cancelled course if subsistence had been cut	350	56	393	55
Would not have cancelled course if subsistence had been cut	276	44	321	45
Would have attended class longer if he had to purchase own books	66	11	43	6
Would not have attended class any longer if he had to purchase own books	538	89	632	94
Enrolled in the cancelled course on the suggestion or advice of a friend	10	2	11	2
Enrolled in the cancelled course on the suggestion or advice of an adviser	139	22	103	14
Self decision on course enrollment	476	76	597	84

the decision whether or not to take a course. The percentage figures in Table II all tend to be quite similar between the two quarters with the exception of the first category relating to the addition of a course to one cancelled. Since a majority of the responses during both quarters revealed that a course was added as well as cancelled, the veteran's credit load often remained unchanged.

In analyzing the reasons given for cancelling courses it is shown that counseling, investigation and planning on the student's part would avoid many of the course cancellations. It is suggested that greater reliance be placed in the recommendations of advisers and counselors by the student when he registers. A greater utilization of the information and suggestions of advisers, counselors, and other students might have been made.

KUDER PATTERNS OF INTEREST AS RELATED TO ACHIEVEMENT IN COLLEGE SCIENCE COURSES

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COMPARISON OF KUDER Preference Record scores with school achievement has been made by several investigators. Thompson (5) found the Kuder science ratings correlated .28 with grades in theory and technique of dental school students. Mangold (4) showed a correlation of .39 between ratings on the Kuder scientific scale and scores on the Cooperative Science Test. She found the correlation between scientific, as measured by the Kuder, and science grades to be .05. Bolanovich and Goodman (1) compared the Kuder profiles of RCA Cadettes who were most successful in electronics engineering courses and those who dropped out of the Cadette training program. Those who dropped out showed lower ratings on the scientific and computational scales and significantly higher ratings on the persuasiveness scale. The correlation between ratings on the scientific scale and grades was .10. These authors do not signify the reason for the Cadettes dropping out. If the reason for dropping was failure in grades, of course this would be worth noting. Triggs (6) correlated Kuder ratings with scores on the Iowa High School Content Test and indicated the following correlations with science ratings of men: mathematics, .36; general science, .32. Women's science Kuder ratings correlated .18 with mathematics and .42 with general science as measured by the Iowa test.

A study by Crosby (2) of the relation of Kuder science ratings with chemistry and biology grades indicates an impressive difference between the high science students and the low science students. The former scored significantly higher in chemistry and biology courses as shown by critical ratios of 7.6 and 12.2 respectively. He found the correlation between science interest and chemistry grades was .64 and a correlation of .67 was shown between science interest and biology grades.

Crosby points out that since only the two extremes of science interest were chosen for comparison (above 90 percentile vs. below 10 percentile) the above correlations should be "interpreted with caution." No sex differences for the groups were given. It would seem possible

TABLE I

SCIENCE AND NON-SCIENCE GRADE MEANS OF COLLEGE STUDENTS SHOWING THREE KINDS OF KUDER PREFERENCE RECORD PROFILES

Groups	Mean Non-Science Grade Point	Mean Science Grade Point	t-values*
A: High Science N = 50	1.51	1.52	1.66
AC: Control N = 50	1.53	1.36	
B: High Science-High Computational N = 25	1.56	1.70	1.03
BC: Control N = 25	1.59	1.34	
C: High Science-Low Persuasiveness N = 22	1.56	1.75	.84
CC: Control N = 22	1.58	1.48	

*The t-values represent a comparison of the high science, high science and computational, and high science and low persuasiveness groups, with the control groups as to mean grades in science courses. None of the t-values are significant to the five percent level.

that, since the group consists of students from a college of agriculture and a home economics college, the ‘‘low science interest-low science grade’’ group might be disproportionately made up of home economics students. Another explanation for the significant differences may be that the students who made higher grades in science were those who made higher grades in non-science courses. This being true the differences would be attributed to differences in scholarship and not necessarily interest alone.

Purpose and Procedure

The purpose of this study is to measure the extent to which success in college science courses[1] can be predicted from ratings on the Kuder.

The following procedure was carried out using college freshmen and sophomore students from a liberal arts college as subjects. Each of the following experimental groups was matched with a control group in terms of grade point average in non-science courses. Group A (science group) is composed of those students who rated above the 75 percentile on the Kuder science scale. The control group (AC) is made up of those students who rated below the 75 percentile on the science scale. Group B students are those scoring above the 75 percentile on both the science and computational scales of the Kuder, and in group BC (control) are those scoring below the 75 percentile on both the science and computational scales. The final combination of interest ratings compared was a high science-low persuasiveness group (C) and a control group (CC) composed of those scoring below the 75 percentile on the science scale and above the 25 percentile on the persuasiveness scale.

All students included in this study had taken the Kuder during or previous to the time they were taking the courses. Both form CH and form BB of the Kuder were used in the study.

Results

Table I shows the mean science and non-science grade points for the various groups. The difference between the grade means of the groups in non-science courses was negligible since this was the basis for the original matching of the groups. The science course grade means of the Kuder high science groups (A, B, C) and the control groups were compared. No significant differences were found as shown by the t-values.

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1. Courses included in the science group of this study are chemistry, biology, geology, and physics.

Summary and Conclusions

Fifty students scoring high on the Kuder science scale were matched with fifty others (control) who scored below the 75 percentile on the science scale as to grades in non-science courses. The two groups were then compared as to grades in college science courses. Such comparisons were also made between twenty-five students showing high science-high computational Kuder profiles and twenty-five students whose ratings on these two scales were below the 75 percentile (control). Twenty-two students having high science-low persuasiveness profiles were then compared with a control group showing neither a high science nor low persuasiveness interest pattern.

The following two conclusions may be drawn from this study. (1) When academic achievement in non-science courses is held constant, college students scoring high on the Kuder science scale do not make significantly higher grades in science courses. This is also found for those scoring high on the science and computational scales, and those scoring high on the science scale and low on the persuasiveness scale. (2) Science interest, as measured by the Kuder, and science achievement, as measured by grades, are not closely related. The latter conclusion coincides with the conclusion implied by Bolanovich and Goodman (1).

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John Schmid, Michigan State College

Froehlich, Clifford P., and John C. Darley, Studying Students: Guidance Methods of Individual Analysis (Chicago: Science Research Associates, 1952), pp. 425, $4.25.

This book is a welcome departure from the great majority of texts in the guidance field in that the authors diligently attempt to avoid "rehashing" what has been repeatedly published. The reader will find that Studying Students is not a revision, but rather an addition and expansion, with the latest research findings as a guide, of the better features of Darley's Testing and Counseling High School Students.

Studying Students is a working handbook and college text written to assist school personnel workers to learn techniques of studying the individual and using the findings effectively.

The book, a combined evidence of the authors' technical competence, presents writing skill, documentation, suggested readings, and new material in a style which will meet the highest requirements of counselor trainers. Studying Students presents a unified approach to the area of objective and subjective methods of measuring and evaluating students. Thus, the text is designed to be helpful to all levels of school personnel faced with the problems of understanding pupils or students as individuals. The presentation does not consist of highly technical language and holds to concepts within the ranges which might be considered appropriate to all non-specialized guidance workers. This feature enhances the book as an excellent aid for school staffs who may be searching for an in-service training volume.

The text is logically organized. It begins with an explanation of the need for analyzing individuals and the techniques which may be used in the process of appraisal. Studying Students treats such topics as evaluation of tests, analysis of individuals by means of test scores, nature of observations, self-report documents and sociometric appraisal of students. The authors discuss the comparative value of each device.

Chapters two and three are devoted to a discussion of the fundamental statistical concepts for analyzing individual differences. The two following chapters offer valuable suggestions concerning techniques and limitations of observation. Considerable emphasis is devoted to the interview as a fact-finding device. This presentation is an example of the colorful writing skill of the authors.

The following chapters consist of an effective presentation of tests. The condensation and review of literature pertaining to identifying interests is a substantial contribution to potential guidance workers.

The book closes with an attempt to assist the readers to identify student problems.

This book, when compared with earlier texts in the field of guidance, offers a magnificent example of the rapid growth and development of a specialized area of educational psychology. Studying Students is, indeed, an important teaching tool for counselor trainers seeking a comprehensive approach to the problems of individual analysis.

J. David O'Dea
University of Wisconsin (Milwaukee Extension)

Goldberg, Samuel, Army Training of Illiterates in World War II (New York: Bureau of Publications, Teachers College, Columbia University, 1951), pp. x + 302, $4.00.

The purpose of this book is to record the details relative to the development, operation, and accomplishments of the army's program for the training of illiterates, non-English-speaking, and Grade V (slow learning) men during World War II.

In the first two chapters the controlling induction policies are described. These policies were periods during which "illiterates were deferred, . . . specified percentages of 'intelligent' illiterates were accepted," and "all illiterates who could pass the screening examinations were taken into the Army." (p. 33)

The second portion of the book presents the program of the special training units. Within a period of twelve to sixteen weeks and a specific objective of assisting men to acquire competence in the use of words and numbers sufficient for usefulness in the army, the program assumed a rather precise pattern. However, it is gratifying to note that in addition to basic skills, the program included orientation of servicemen in personal and social adjustment.

As far as the confines of its purposes permitted, the program of the special training units utilized the most advantageous educational procedures. Materials were drawn from circumstances of army life of trainees. Subject areas were integrated in a composite curriculum implemented with appropriate techniques. In addition, audio-visual aids were used to the fullest extent of their possibilities. For those trainees who experienced difficulty in learning, remedial procedures were provided in clinical situations as a means of facilitating the program. Counseling and guidance were provided at all stages during training.

Since time and level of proficiency were set at a minimum, testing for attainment was crucial. The pattern for evaluation and teaching consisted of pretest, teach, and test with succeeding repetitions of teach and test until mastery was attained, or until it became evident that the trainee was incapable of learning, in which case an honorable discharge was given.

The final section of the book deals with the accomplishments and evaluation of the program. Of the 302,838 men received for training, 254,272 were "graduated." The author concludes that the program was "highly successful" in that "61.6 percent of all those initially classified at the first grade level, were taught to read at a fourth grade level in twelve to sixteen weeks of instruction." (p. 277)

As a record of the army training program for illiterates, this book serves its purpose admirably. Although not exhilarating reading, the person who is seriously intent on the pursuit of information relative to the training of illiterates can find much thought provoking material in this volume.

Palmer A. Graver

Sacramento State College

Vernon, Philip E., The Structure of Human Abilities (New York: John Wiley and Sons, Inc., 1951), pp. 160, $2.75.

A critical review of the literature on human abilities for the period 1935-49 is organized and presented in terms of hierarchical group-factor theory. The author has used material published in Great Britain and the United States, but has also called upon continental publications, and "unpublished analyses carried out by British psychologists in the services." For this alone the work would be a worthy contribution to the human sciences.

Written for the non-technical reader, mathematical theory and techniques of analysis are omitted. The entire book is written with exemplary simplicity, clarity, and format. Following two initial chapters devoted to historical development and basic concepts of factor analysis as applied to human abilities, the hierarchical group-factor theory of abilities is discussed in terms of age, temperament, interest, and selection. Having thus laid the groundwork, the discussion proceeds to review analyses of educational achievement factors; verbal and non-verbal intellectual factors; experimental factors such as practice, difficulty, and speed; the sensory and aesthetic abilities and the psychomotor, physical, and mechanical abilities. A final chapter, devoted to occupational abilities, is followed by an appendix presenting brief comment on divergences between hierarchical and group-factor methods.

In terms of the author's stated purposes, the coverage of these various topics is thorough and the treatment objective. The format is marked by liberal use of diagrams, and by abstracts at the head of each chapter. The prose is fluent and major sub-topics are printed in bold-faced type to facilitate following the plan of the work. A bibliography of 265 references and a thorough index are provided.

Considerable light is thrown upon factorial stability under various conditions by the use of numerous comparisons of research results. This has enhanced the value of the book for reference purposes, as well as for general background information. Educators and psychologists will find this book a valuable addition to their professional libraries.

John. A. Creager

Lackland Air Force Base, San Antonio, Texas

Brief Commentaries

Rodriguez Bou, Ismael et al., Recuento de Vocabulario Espanol (Spanish Vocabulary Count, Volume I, Editado por OEA Y UNESCO (Rio Piedras, Puerto Rico: University of Puerto Rico), pp. xx + 668.

This study is one of a series of researches conducted under auspices of the Superior Educational Council of Puerto Rico under the direction of Dr. Ismael Rodriguez Bou, Permanent Secretary of the Council. It is published jointly by the Council, the Organization of American States, and the Organization of the United Nations for Education, Science, and Culture.

The Spanish Vocabulary Count shows the frequency of use of 20,542 word units and of a larger number of inflectional forms. The list is based upon a count of more than seven million words from ten principal sources, including the earlier Buchanan list. Special care was taken to include both oral and written sources and to give due weight to contemporary vocabulary.

The book is a scholarly production of great practical value to educators, testbook writers, and others who need some knowledge of the frequency of the words which they use. It will be especially useful to education in Spanish-speaking countries of this hemisphere and to the teaching of Spanish in this Country.

Herschel T. Manuel

University of Texas

Goulden, Cyril H., Methods of Statistical Analysis (New York: John Wiley and Sons, Inc., 1952), pp. vii + 467.

This is the second edition of Goulden's book, the first edition being published in 1939. Goulden is chief of the cereal division of the Central Experimental Farm, Ottawa, Canada. He has set up the text in an attempt to meet the needs of the person who is or intends to be a research worker.

The book has many examples worked out to completion, the algebraic development of design theory is presented, and the chapters are supplemented with exercises and references. Offered are sections on partial and multiple correlation, factorial experiments, incomplete block experiments, non-orthogonal data, probit analysis, and quality control.

L. J. L.

Jelenko, Victor, The Republic of the Schools: An Educational Program for Democracy (New York: Exposition Press, 1952), pp. 224, $3.00.

There has been much written by professional educators relative to education for democracy. Jelenko, who is not a professional educator, presents his views not on how to teach, but what to teach in fostering a better democratic way of life. He attempts to bring the thinking of the teacher and the parent to closer harmony in establishing a common ground for discussion.

L. J. L.

Landis, Paul H., Adolescence and Youth: The Process of Maturing (New York: McGraw-Hill Book Co., Inc., 1952), pp. xii + 461, $5.00.

The basic theory and general outline of Adolescence and Youth is the same as the 1945 edition; however, the text and data have been greatly revised, expanded, and brought up to date. The central theme is the difficulty encountered in attaining maturity in the moral, marital, and economic areas of development. Division is made according to urban, rural, and town society.

The age range from 12 to 24 is covered with the social and psychological forces affecting the development of youth. Problems of school, church, and state are analyzed critically.

The book is read easily. Its meaningfulness in enhanced by excellent graphs and pictographs. Questions, problems, and references are provided at the end of each chapter. Visual aids which might supplement each section are suggested and described briefly.

L. J. L.

Research News and Communications

Lawrence P. Blum, Student Personnel Service, University of Wisconsin Extension
Milwaukee, Wisconsin

Educational Testing Service announces new program of assistance to users of tests. Formation of a new Evaluation and Advisory Service for the users of tests in schools and colleges has been announced by the Educational Testing Service of Princeton, New Jersey. The new service is expected to function as a consultative agency to ensure proper and full use of tests and test results. It will be particularly concerned with the use of tests to evaluate the results of school and college educational programs. Correspondence and field services will be important features of the activities of the new service, and staff members will participate extensively in testing workshops and meetings. Requests for information on testing may be addressed to the Evaluation and Advisory Service, Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. A similar service will be inaugurated at the same time in the western states served by the Los Angeles office (4641 Hollywood Boulevard).

Study needs of school board members. The Department of Education, Southern Illinois University, Carbondale, Illinois, is undertaking a school board research project as a pilot study to determine the needs of school board members and explore the kinds of services which institutions of higher education can render to meet these identified needs.

Six public school boards are involved in the project. Regular visitations were scheduled to observe the boards in action, tape recordings were made of their proceedings, and inventories were completed by the forty-four board members to determine the backgrounds, philosophy, and needs of the board members.

Although this project will not be completed until September, 1953, tentative results indicate the following:

1. Four of the six participating boards do not have their policies in writing.
2. Eight of fourteen board members who have served one-two years have never been supplied with any kinds of printed materials dealing with the duties and responsibilities of their office.
3. In response to the question, "Would you like to have written materials which would give you a broader understanding of your duties and how to carry them out effectively?," thirty-nine of forty-one board members answered, "yes."
4. A summarization of individual responses to the question of what are the most pressing needs and/or problems of our board (not using a prestructured problem checklist) resulted in the following eight problem areas being men-

tionned most frequently:

   a. Need for improving press, radio, and community relations.
   b. Need for additional school personnel (special services).
   c. Need for study and obtaining increased financial support.
   d. Need for reducing overcrowded classrooms.
   e. Need for clarifying functions and responsibilities of board members versus chief school officer.
   f. Need for more business-like procedures in the school system.
   g. Need for improving board meetings and procedures.
   h. Need for school plant expansion with emphasis upon gymnasium and cafeteria facilities.

5. The tape recorder has proved an excellent device for illustrating to boards faulty parliamentary procedures, how a board utilizes its time, and the ratio of time spend on business and finance vs. basic educational problems.

It appears that certain services by colleges and universities would help meet these needs. These services could include consultations with school boards regarding specific situations, on-campus school board conferences, and special project services designed to improve the quality of school board meetings and community leadership.

Further information concerning this project can be secured from Jacob O. Bach and Woodson W. Fishback, Department of Education, Southern Illinois University, Carbondale, Illinois.

Audio-Visual Communication Review announced. The Department of Audio-Visual Instruction of the NEA announces a new professional and research quarterly for those interested in communication. The new publication will make its first appearance February 1, 1953. The editor is William H. Allen, Bureau of Visual Instruction, University of Wisconsin.

Each issue will contain information covering: summaries and analyses of research in the field of audio-visual communication and related fields; theoretical and analytical articles of general concern to persons professionally interested in the field of audio-visual communication; listings of current proposed research projects including theses and dissertations; book reviews; film, television and radio reviews. Annual subscription: DAVI members, $3; nonmembers, $4; individual copies, $1.25. Address Department of Audio-Visual Instruction, 1201 16th Street, N.W., Washington 6, D.C.

Evaluate elementary teacher training program. A grant from the Field

Foundation, Inc., will enable New York University's School of Education to evaluate its intensive, year and a half program of training students who hold baccalaureate degrees in liberal arts or secondary education to become elementary teachers. Upon completion of the survey in the spring of 1953, the results will be printed and distributed for the use of colleges interested in this type of teacher education.

Annual summer institute in survey research techniques announced. This special program sponsored by the Survey Research Center of the University of Michigan is designed to illustrate the theory and application of survey research to such fields as business and human relations, education, psychology and sociology, public affairs, public health, economics, and statistics. Again this year a special workshop will be offered in the practical application of survey research methods to these individual fields. The dates for this session are June 22 to July 17, and July 20 to August 14. For further information write to the Survey Research Center, University of Michigan, Ann Arbor, Michigan.

Research Abstracts and Bibliographies

T. A. Lamke, Iowa State Teachers College, Cedar Falls, Iowa

Meece, Leonard E. and others. Twenty-five Years of Service to Kentucky's Schools. Bulletin of the Bureau of School Service, University of Kentucky, Vol. XXV, No. 2. (Lexington, Ky.: University of Kentucky, 1952). 63 pp. $.50.

An historical review and evaluation of the activities of the Bureau of School Service of the University of Kentucky since its founding. Lists research studies conducted by the Bureau to date.

Orleans, Jacob S. and others. Employment of Teacher Education Graduates of the Municipal Colleges of New York City, Number 1: 1945-49. (New York, N.Y.: College of the City of New York, Office of Research and Evaluation, 1952). 38 pp., n.p.

A career history of graduates of teacher training curricula in the four municipal colleges.

Public School Revenues, 1949-50. NEA Research Bulletin, Vol. XXX, No. 4. (Washington, D.C.: National Education Association Research Division, 1952). 61 pp., $.50.

A report on the tax sources of public school revenues.

Residential Treatment Centers for Emotionally Disturbed Children. (Washington, D.C.: Federal Security Agency, Children's Bureau, 1952). 78 pp., $.25.

A directory listing institutions and centers whose primary purpose is the residential treatment of emotional and personal problems of children. The services and facilities available at each institution are described briefly.

Reynolds, Earle L. The Distribution of Subcutaneous Fat in Childhood and Adolescence. Monographs of the Society for Research in Child Development, Vol. XV, No. 2. (Evanston, Ill.: Child Development Publications, 1952). 189 pp., n.p.

The chief purpose of the study was to provide measurements and tenative norms for the amount and distribution of subcutaneous adipose tissue in the body during childhood and adolescence. Contains a 230 item bibliography.

Robinson, Helen M., Editor. Clinical Studies in Reading II. Supplementary Educational Monographs No. 77. (Chicago, Ill.: University of Chicago Press, 1953). 189 pp., $3.75.

Reports research and experiences in the area of remedial reading. Contains a list of books suggested for poor readers at most levels.

Samuels, Henry, The Validity of Personality-Trait Ratings Based on Projective Techniques. Psychological Monographs, Vol. 66, No. 5 (Washington, D.C.: American Psychological Association, 1952), 21 pp., $1.00.
Concludes that the value of projective techniques as instruments for the assessment of specified personality traits in a group of normal superior adults is apparently limited by low validities.

School Facilities Survey. U.S. Office of Education, School Housing Section, Second Progress Report (Washington, D.C.: U.S. Government Printing Office, 1952), 63 pp., 35¢.
Provides information on the current needs for additional school plant facilities, and on the state and local resources currently available for meeting these needs, in thirty-seven states and territories.

Selection and Training of Shorthand Students in Ontario Secondary Schools. Educational Research Series No. 23. (Toronto, Canada: Sir Issac Pitman and Sons, 1949). 68 pp., n.p.
Contains a survey of the shorthand teaching practices in secondary schools in the province of Ontario and a study of the prediction of success in shorthand.

Small, Leonard. Personality Determinants of Vocational Choice. Psychological Monographs No. 351, Vol. 67, No. 1. (Washington, D.C.: American Psychological Association, 1953). 21 pp., $1.00.
A comparison of the vocational choices made by adjusted adolescent boys with those of emotionally disturbed boys.

Stauffer, Russell G., Compiler. Reading for Meaning. (Newark, Del.: School of Education, University of Delaware, 1952). 77 pp., n.p.
Contains papers given at the 34th annual educational conference at the University of Delaware, the theme of which is indicated by the title.

Suloway, Irwin J., Free and Inexpensive Teaching Aids for the Language Arts. Chicago Schools Journal, Vol. XXXIV, Nos. 3-4, November-December, 1952, Supplement (Chicago, Illinois: 6800 Stewart Ave., 1952), 24 pp., 10¢.
Lists pamphlets, units, bulletins, booklets, posters, and the like, and gives sources for recordings, filmstrips, and films, all useful for the teaching of the language arts in grades one through twelve.

Tuddenham, Read D. Studies in Reputation. Psychological Monographs No. 333, Vol. 66, No. 1. (Washington, D.C.: American Psychological Association, 1952). 58 pp., $1.50.
A study exploring the use of a ''reputation test'' in the elementary school.

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SECOND REPORT OF THE COMMITTEE ON CRITERIA OF TEACHER EFFECTIVENESS

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American Educational Research Association

Main Ideas from the First Report[1, 2]

THE EARLIER report of this Committee presented a conceptual framework for planning studies in the area of teacher effectiveness. To provide a basis for following the discussion of certain problems in the present report, the following paragraphs give a brief statement of the main ideas in the first report:

1. The study of teacher effectiveness must assume the possibility of different patterns of effectiveness for different kinds of teachers, pupils, educational programs, or situations, and the possibility of a variety of patterns of effective teaching for any given teacher-pupil educational program combination. We refer to this as the “multidi-

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[1] "Report of the Committee on the Criteria of Teacher Effectiveness," *Review of Educational Research*, XXII (June, 1952).

[2] The AERA Committee on Criteria of Teacher Effectiveness held its second extended work session at the Hotel Cleveland, Cleveland, Ohio, on April 22, 23, and 24 of 1952. Present at the meeting were H. H. Remmers, Chairman; N. L. Gage; Jacob S. Orleans; and David G. Ryans. Unable to attend were A. S. Barr and Burley V. Bechdolt; the former, however, read the report and made a number of suggestions relative to its content. The chairman reported the resignation of Dr. Warren W. Coxe, who had attended meetings of the Committee up to this time. Since then Dr. C. Robert Pace has been appointed to the Committee.

mensional" concept of teacher effectiveness.

2. The ultimate criteria of teacher effectiveness are posited to be in terms of changes in pupil behavior, changes in the operation of the school, or changes in the community in its relation to the school. Conceivably, the changes may be more significant as criteria long after formal schooling has ceased than at the time of the teacher's performance. Realistically, it seems necessary to assume that changes at the time the pupil is under the teacher's influence are sufficient to serve at least as a first approximation in evaluating teacher effectiveness.

3. The problem of predicting teacher effectiveness is one of predicting that a teacher will produce certain changes in pupil behavior;[3] or that a certain candidate for admission to a teacher education program will, when he becomes a teacher, produce certain changes in pupil behavior. Determining the predictors of the ultimate criteria (changes in pupil behavior) is the essence of the problem of determining teacher effectiveness. Under "pupil behavior" we include not only overt non-verbal behavior but also pupil enjoyments, appreciations, acceptances and the like as they are or can be verbalized by pupils.

4. To predict teacher effectiveness it is necessary to relate teacher behaviors and characteristics to the effects of these. In turn it is necessary to set up formal hypotheses concerning relations between teacher behaviors and characteristics and the effects of these on pupils. These hypotheses must then be tested through empirical research. But the number of such possible relations is very great. "... the basic question of research strategy that must be faced before a fruitful attack can be made on the welter of possibilities in this area",[4] is that of which hypotheses to set up and test.

5. The planning of studies and the treatment and interpretation of data must take into account intervening variables (modifying or limiting factors)—for instance, the kinds of pupils, the nature of the school program, and situational factors. "Proper regard (for intervening variables) ... should result in hypotheses that are more subtle, conservative, and realistic in relation to the factors that actually govern relationships between the behaviors and the effects of teachers."[5]

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[3] The Committee, in its earlier report, posited the three areas of criteria listed in the preceding paragraph. To simplify the presentation only one of these will be referred to or used for illustrations--changes in pupil behavior. It should be understood that coordinate references and illustrations can be made for the other two areas--changes in school operation and in the community in its relation to the school.

[4] Op. cit., p. 253.

[5] Op. cit., p. 254.

6. Psychological theory and theory from other disciplines should serve as bases for setting up hypotheses. "Our point is merely that in attempting to 'spell out' the rationale underlying the hypotheses that a given teacher characteristic is related to some kind of effectiveness on the teacher's part we can achieve a better grasp of the assumptions underlying our research and practice if we use the best relevant psychological theory. We may then find ourselves compelled to develop more systematic and more adequate theory. Explicitly psychologizing our hypotheses concerning relationships between our variables should have a chastening effect on the kinds of research we attempt. And also our understanding of these relationships should then increase in more orderly fashion."[6]

7. Research on teacher effectiveness requires measurement of teacher behaviors and characteristics, of the effects of teachers, and of the intervening variables, that is, such other factors as affect the variables under investigation. All three types of measurement constitute major tasks; since valid devices are not available for many of the pertinent variables.

8. The realization of a sound basis for programs of teacher selection, training, and supervision depends on the kinds of research designed to test the hypotheses which are set up. Over-all "ideal" investigations are not likely to be fruitful because of the serious difficulties they encounter in controlling the many variables other than the specific independent variable being studied. A variety of research strategies is desirable, some deriving from close contact with classroom situations and other direct teacher-pupil contacts, the observation of them, and careful analysis of data obtained in classroom situations.

Characterization of Previous Research

In the earlier decades of this century, research seems to have been aimed at discovering *the characteristics* of *the* effective teacher. Teacher effectiveness was generally assumed to depend on one or more pattern or dimension, which held true regardless of the kind of person the teacher was, the kinds of pupils he affected, the nature of the educational program, the kind of school administration and supervision, or the kind of environment of which the pupils were a part. In the search for the *elements* or the *characteristics* of the teacher which were assumed to comprise the pattern of teacher effectiveness, the attempt was repeatedly made to correlate single traits of teachers with one or more criteria. This approach led to an overgeneralized view of teaching and reduced considerably the likelihood that good teaching might be viewed as a part of some broader situation. Furthermore, most often the criterion employed was the rating of the teachers, thus bringing, in a sense, both the characteristics and the criterion into the same dimension. Unfortunately, too, many of the ratings were made by persons untrained for such tasks, and hence of questionable validity. Further, if the assumption is sound that teacher effectiveness is a function of the extent to which it represents changes in pupils, then the ratings of teachers so commonly used do not correlate highly with such a criterion or other multi-dimensional criteria.

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[6] *Op. cit.*, p. 256.

Even where pupil change has been the criterion, in most instances the effects measured have been limited to mastery of academic subject matter. One finds, for example, attempts to determine whether the mastery of high school Latin, mathematics, or English correlates with various characteristics of teachers. Most such studies arise from an inadequate rationale. There is a rationale for each of the many studies, but it is evidently not adequate to explain the complex behavior of teaching. It is not surprising, then, to find so many of the traits investigated unrelated to the criteria of teacher effectiveness which have been employed.

Teacher effectiveness is an aspect of a very complex situation. We must recognize the complexity of such situations and the large number of variables which interact in determining the effects of individuals and groups on each other. Psychological theory no longer permits a disregard of the significance of such variables as the personality structures of pupils, their social adjustment, their intelligence, their home-determined attitudes and values, and the relation of these to similar qualities in the teacher.

Much of the research of the past four decades does not made adequate use of established psychological or sociological theory. It has proceeded too often on hypotheses derived from an oversimplification of the situation and an inadequate methodology, leading to conclusions that frequently do not make psychological or educational sense.

Uses of Criteria

Discussions of criteria have frequently been confused in the past by a failure to specify the different "levels" at which the need for criteria may exist. By "levels" we mean simply the stages in the progression from candidate for entrance into teacher training to on-the-job operation as a full-fledged teacher. By the very nature of the case some kinds of criteria can never be available at certain levels. For other levels, entirely different kinds of criteria can be developed. Yet these different kinds of criteria, appropriate to the different levels, are logically related. In this section we develop a categorization of criteria in terms of their uses at different levels of teacher training or service.

The task of research on teacher effectiveness is to discover teacher dimensions (behavior and characteristics) which are related to the criteria. In the previous report of the Committee criteria were discussed from the standpoint of both ultimacy and practical use. The essential problem in research on teacher effectiveness is finding which teacher dimensions (behaviors and characteristics) are related, under what conditions, to specified effects on pupils (or on school operation, or on community-school relations). The effects on pupils are the criteria.

The need for determining such teacher dimensions arise in making at least the following kinds of decisions concerning teachers:

1. *Teachers of experience*. Granting tenure to teachers who have had one or more years of teaching experience; or selecting for assignment to a teaching position from among teachers who have taught for one or more years; or selecting teachers of experience for special assignment or other special treatment, such as salary increases.
2. *Those just completing teacher training*. Certifying and selecting for teaching assignments from among prospective teachers who have completed their professional training programs but who have not yet taught.
3. *Those in a teacher-education program*. Planning programs for preparing teachers who will produce desired effects on pupils; or guiding students who are in teacher education programs.
4. *Prospective teachers-in-training*. Selecting among applicants for admission to teacher education programs; guiding high school graduates toward teaching as their vocation.

In the case of teachers of experience it would be theoretically possible to determine directly the effects of their behavior on pupils. Since that is difficult, it is often desirable to measure, as "criteria," the teacher's behaviors and characteristics, and to use such validated measures as predictors of desired effects on pupil behavior. These validated predictors can themselves become "criteria" in two senses: as the measures (or "criteria") used for teacher employment or the granting of tenure; as proximate or intermediate criteria for finding those teacher dimensions that are significant in considering individuals who have not yet taught.

Presumably many of the teacher behaviors eventually found to be good predictors of effects on pupils will be classroom behaviors. Information on such behaviors is, of course, not available for those who have not yet taught. For these, a new set of predictors must be found. This second level of predictors may be validated against the ultimate criteria, which would mean conducting the necessary research over a period long enough to give the subjects an opportunity to teach. Or they can be validated against measures of those dimensions (classroom behaviors) shown to be good predictors of the ultimate criteria for those with teaching experience.

Again, predictors for those in a teacher education program and for those seeking admission to such programs can be validated against either ultimate criteria (effects on pupils) or proximate criteria, e.g., he classroom behaviors of teachers related to the ultimate criteria. t may well be desirable to validate predictors by both methods, the horter procedure furnishing more immediately usable data, the longer yielding more valid data.

Level or Need	Criteria
. It is assumed that the measure of teacher effectiveness is the change produced by the teacher in pupils (or in school operations, or in community-school relations). Determining the effectiveness of teachers consists of finding the effects of teachers on pupils.	A. Ultimate Criteria: Changes in pupils (either while in school or later).
. For teachers with several years of teaching experience, there may be need to (1) select for appointment to a teaching position; (2) determine whether permanent tenure should be granted; (3) grant special consideration, such as salary increment or special assignment.	B. In-Service Predictors; i.e., predictors of the ultimate criteria: Teacher performances, personality characteristics, attitudes, interests, knowledges and skills, and the like. These predictors may serve in place of the ultimate criteria (A), and may be employed in their stead as measures of predicted teacher effectiveness. They then are used as "criteria" for the selection of teachers for the purposes indicated at the left. They may also be employed as intermediate criteria for validating predictors of teacher effectiveness as indicated under (C) and (D) below.

C. For persons who have completed a teacher education program, but have not yet taught, there may be need to (1) determine whether certification should be granted; (2) select for appointment to a teaching position.	C. In-Training Predictors; i. e., predictors of the in-service predictors used as criteria (B) upon completion of a teacher education program; or of the ultimate criteria (A) after the individual has had some teaching experience: Personality characteristics, attitudes, interests, knowledges and skills, and the like. These predictors may serve in place of the ultimate criteria (A) or the proximate criteria (B) as measures of predicted teacher effectiveness. They may also be used as criteria for validating predictors as indicated under (D).
D. To determine admission to a teacher education program, or retention in the program, or the guidance of a student in such a program.	D. Pre-training Predictors; i. e., predictors of the in-service predictors used as criteria (B); or of the in-training predictors used as criteria (C); or of the ultimate criteria (A): Personality characteristics, attitudes, and interests, knowledges, and skills. These predictors may serve in place of the ultimate criteria (A), or of the in-service criteria (B), or the in-training criteria (C) as measures of predicted teacher effectiveness; that is, of the effect the student may be expected to have on pupils some years later as a teacher.

The ultimacy of criteria may be considered in terms of the "distance" of behaviors or characteristics—of how far they are removed—from the ultimate criteria. Yet, all behaviors and characteristics of teachers can hardly be assumed to occupy merely different positio on the same dimension. They are not the same kinds of things. The teacher's effect on the pupils' satisfaction with the teacher is not coordinate with the teacher's knowledge of methods of curriculum construction, or with aspects of his personality, or with his academic intelligence. And still these and many other behaviors and characteristics may be predictors of the ultimate criteria—predictors of the changes in pupils that may be expected of experienced teachers, teachers just completing training, teacher trainees, or applicants for teacher training. The validity of any measure as a predictor is the relationship between it and one or more specified effects on pupils.

The essence of the research problem is then the discovery of these relationships—bearing in mind that they may vary with the kind of person the teacher is, with the kind of pupil the teacher is affecting, with the nature of the educational program in which the teacher operates, and with other facets of the situation (such as the neighborhood and the family) in which the teacher's influence on pupils is being exerted. Figure I represents schematically the various levels of needs, criteria, and predictors.

Considerations in Evaluating Criteria

Various considerations may be applied to the evaluation of criteria. Such evaluation of criteria is desirable for two purposes: (1) judging in advance the feasibility and desirability of employing a given criterion in a study, or the kinds of studies that it may be feasible to engage in with the criterion in question; and (2) finding the problems that must be dealt with in conducting a study with a given criterion. The Committee developed the following set of considerations as a beginning in this approach to criterion evaluation:

1. Ultimacy or validity (relevance to ultimate social values).
   For example, "participation in civic affairs" is a much more ultimate, and therefore valid, criterion than is legibility of handwriting.

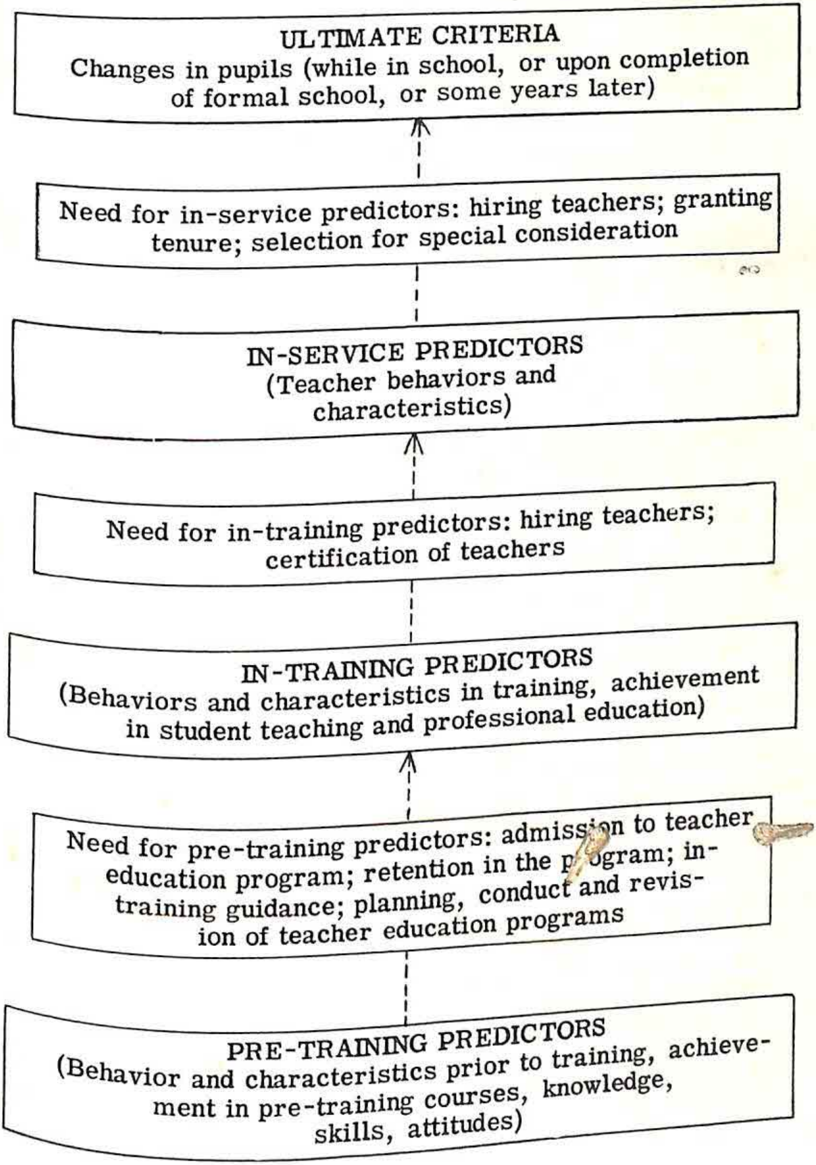
2. Ease of definition and measurement.
   For example, measurement of skill in spelling or arithmetic is much less difficult than measurement of "ability to work cooperatively," or of "delinquency."

3. Ease of isolating as effects of teachers.
   For example, pupils' understanding of basic arithmetic processes is more easily isolated as the effect of a given teacher than is the pupils' attitude toward other cultural groups.

4. Length of time required before criterion measures can become available.

FIGURE I

SCHEMATIC REPRESENTATION OF LEVELS OF CRITERIA AND THEIR USE


ULTIMATE CRITERIA
Changes in pupils (while in school, or upon completion of formal school, or some years later)
Need for in-service predictors: hiring teachers; granting tenure; selection for special consideration
IN-SERVICE PREDICTORS
(Teacher behaviors and characteristics)
Need for in-training predictors: hiring teachers; certification of teachers
IN-TRAINING PREDICTORS
(Behaviors and characteristics in training, achievement in student teaching and professional education)
Need for pre-training predictors: admission to teacher education program; retention in the program; in-training guidance; planning, conduct and revision of teacher education programs
PRE-TRAINING PREDICTORS
(Behavior and characteristics prior to training, achievement in pre-training courses, knowledge, skills, attitudes)

For example, measures of current achievement in arithmetic can be obtained in a much shorter time than can measures of pupils' ability to use arithmetic in solving their own income tax, banking, and other financial problems as adults.

5. Amount of attrition in number of cases.
   Attrition of cases in a study may be a function of the lapse of time before criterion measures are obtainable, or it may be a function of the subjects' cooperativeness in furnishing personal data.

6. Comparability (among different teachers, departments, schools).
   For example, mastery of arithmetic computation skills is more likely to be defined the same way for different teachers than is achievement in social studies or in civic achievement.

7. Cooperation in getting data from persons involved.
   For example, a principal may be more cooperative in permitting tests of subject matter achievement than in permitting classroom observations of pupils' social behavior.

It must be recognized that research on teacher effectiveness almost inevitably becomes time-consuming and expensive. Since the crux of work in this area is the criterion, to accept an inadequate criterion may mean sacrificing the importance of the work at the start. The difficulties in developing adequate criteria are not insurmountable; they can, with sufficient ingenuity and resourcefulness, be faced and dealt with. The alternative practice of using easily obtained but inadequate criteria is unlikely to advance this area of research.

Common Research Problems

If it is granted that the essential purpose of research in teacher effectiveness is to discover relationships between teacher dimensions (behaviors and characteristics) and teacher effects (criteria in the form of changes in pupils, schools or communities), then studies to reveal such relationships must lead to certain common problems.

1. Measurement of Criteria. The findings of a study can be no more meaningful than the criterion. To use "effects on pupils" as the criterion, it is therefore essential to define those effects and to create measuring devices, if such do not already exist, which will yield valid

measures of them.

In passing, it might be mentioned that a composite or general measure of achievement may cover up relationships between teacher dimensions and specific aspects of achievement. More important, however, are the achievements being measured. Many achievement tests are limited to relatively simple skills and knowledge. Yet achievement of skills and knowledge are not necessarily measures of understanding, interpretation, application, appreciation, reasoning, or other higher mental activities. They can certainly not serve as measures of personality growth, social adjustment, or other non-intellective functions. One may well question whether the data obtained from many achievement tests represent more than *apparent* achievement at the time the learning has taken place, or more than the effects of overlearning.

Studies of teacher effectiveness employing changes in pupils as the criterion will depend for their value on the measures of those changes. It is therefore important to define carefully the changes in pupils likely to be generally regarded as most significant and to create appropriate measuring techniques and devices. This calls for developing measures of achievement in skills and information which go beyond apparent immediate achievement and also for tests of reasoning, understanding, application, and the like, in "subject matter" areas. It will call for measures of the effects on pupils in other than "subject matter" areas—in emotional and social adjustment, attitudes, interests, values, and the like.

What has been said about valid measures of the effects of teachers on pupils would hold equally for their effects on school operations and on community-school relations.

2. *Classroom Observations*. The first report of the Committee pointed out (p. 253) that in view of the large number of conceivable pairings of a teacher dimension with a teacher effect, it is important to select for study the much smaller number of relationships likely to be significant. To secure bases for hypothesizing significant relationships, as well as for studying the relationships themselves, it would seem necessary to observe teachers operating in classrooms. Much research on classroom observation has already been done. But for studies of teacher effectiveness, better answers are needed to the questions: What to observe? How to observe it? What to record? How to record it? and How to interpret observations?

Unless different classroom observers observe the same things and record them in an appropriate manner, and unless they observe what is relevant for their purpose, observational data will lack validity and reliability. It is therefore important that, before studies of teacher effectiveness are undertaken which must rely on classroom observations, studies be planned and accomplished which will show how to make reliable observations and how to interpret them reliably. It might be added, incidentally, that the findings of such studies of classroom observational techniques should materially improve supervisory activities and teacher ratings. Some good research on and by means of observational techniques and procedures has been done, especially at the pre-school laboratory and kindergarten level.

3. The Classifying of Teachers and Pupils. Instead of the term "teacher effectiveness," the frame of reference for the present conceptualization rather justifies the expression "teacher effectivenesses." By this is meant the likelihood that there are patterns of teacher effectiveness which may vary by kind of teacher, by kind of pupil, by educational goal, and for various situations. While it is, indeed, possible that elements of patterns, or perhaps even entire patterns, may be generally significant for several categories of teachers, of pupils, and so on, this possibility is hypothetical and requires proof. If true, it will emerge from research.

Until research yields such results, however, it would seem safer to assume that patterns of teacher effectiveness—the predictors of teacher effects—may vary according to the kind of teacher; that is according to his social adjustment, his personality organization, his intellectual attributes, the kind of professional training he has received, and other possible dimensions. Again the possibilities here are so numerous that it is essential to start with those categories judged most likely to produce fruitful results. Therefore, it would seem desirable that studies be undertaken on the problem of differences among teachers which make for differences in the factors that determine per se their influence on children.

The same argument would hold for categories of pupils. The same teacher may have different effects on pupils who differ in social adjustment, personality structure, or intelligence. Both to reduce the amount of research to be done, and to insure greater likelihood of fruitful results, it is important that studies be designed to take account of possible differences among pupils which make for differences in the effects of teachers on them.

This point may be illustrated in terms of the "interaction variance" that can be extracted when, in analyses of variance, the total variance is analyzed into three or more components. We are saying that research should provide for the identification of significant interaction variances.

4. Isolating the Influence of a Single Teacher. Effects on pupils can patently result from many influences. When the influence of the present teacher is under investigation, two other major sources of influence need to be taken into account: (1) the influence of previous teachers, and (2) other-than-teacher influences (e.g., the neighborhood, family, mass media of communication, community agencies). Important as this consideration is, it is probably a matter of experi-

mental design, research planning, and statistical treatment of data.

Isolating the influence of the present teacher from that of previous teachers presents a different kind of difficulty. When does a teacher's influence become observable—at the time the pupils are with him, or sometime after they have left him to go on to another teacher? To the extent that the latter is true, the measurement of the effect of a teacher's influence at a given time is (1) contaminated, by carry-over effects of the influences of previous teachers, and (2) incomplete, because some of the present teacher's influence has yet to become observable. Moreover, the immediate effect of the present teacher may well be regarded as significant only to the extent that it has permanent value for the pupil. Transitory influence—apparent learning—is hardly a valid criterion of the teacher's effectiveness.

5. Isolating the Influence of a Single Behavior or Behavior Pattern of a Single Teacher. A teacher's performance is obviously a complex of behaviors. To assume that the totality of a teacher's behavior is the cause of his effectiveness may mean hiding the specific significant elements of behavior. The same "teaching method" may be more effective when employed by the "warm and kindly" teacher than when employed by the "business-like" teacher. It may well be that such teacher behaviors, or characteristics of behavior, play a large part in producing effects on pupils. They may be necessary, but not sufficient in themselves. They may be the leavening force that is necessary for a teacher's effectiveness. If that is true, the planning of studies must make it possible to discover and evaluate them. Extensive observation and clinical analysis may provide clues for determining whether single teacher behaviors or behavior patterns are significant for teacher effectiveness. Again, the study of interaction variance, or something analogous to it, is required.

6. Cautions to be Observed in Conducting Research on Teacher Effectiveness. Several features of research on teacher effectiveness are worthy of metnion because they present difficulties in the conduct of studies, or in obtaining and interpreting data.

(a) Administrative Clearance. It is often difficult to obtain administrative clearance for research in teacher effectiveness. Administrators are quite understandably concerned about their relationships with their teachers, boards of education, and parents. Teachers are generally anxious about having their work observed or themselves measured. Administrators are well aware of teachers' reactions to such activities. Studies in teacher effectiveness are "loaded with dynamite." So they must frequently be presented in innocuous terms. In any event, administrative clearance must be secured before studies are initiated in a given school or school system. The ground for such clearance must be carefully laid. Administrators must be willing to agree that the data are privileged, to be known only to the researcher.

(b) Rapport with Teachers. Good rapport with teachers is essential. This may call for an extended period of classroom observation, personal conferences with teachers, and occasional participation in teachers' social functions. It would seem wise to assume that observations and other data concerning teachers may lack validity, unless the teacher is comfortable with the researcher in the room and can carry on in the classroom as though he were not present. Knowledge of the purposes of a study may interfere, while realization that information gathered concerning the teacher is confidential may alleviate the difficulty or even facilitate the research.

Teachers, like other persons, are prone to be sensitive about being evaluated, particularly by ratings. This difficulty is closely related to the one mentioned in the previous paragraph. Teachers are usually not happy about administrative and supervisory ratings. However, these are administrative evils the teachers must accept as part of the price of being a teacher. Research in teacher effectiveness may entail ratings or observations of teachers by pupils, by colleagues, by administrators and supervisors, and by the research staff. In view of the significance and cost of research on teacher effectiveness, it is desirable to develop techniques that lead teachers to understand and accept their part of it. Conducting studies objectively and "coldly," without regard for teachers' sensitivities, may produce meaningless results.

(c) Comparability of Objectives. Teacher effectiveness must be measured in terms of objectives of the educational process. If comparisons of teachers are to be made, the teachers compared must be aiming at comparable objectives. This is only one of a number of elements of comparability which must be safeguarded and which is likely to be very difficult to achieve.

Some Research Approaches

As already stated, the Committee reached the conclusion that sound research is dependent on the development of a theoretical framework. This section of the report presents proposals for achieving the planning of a sound program of research on teacher effectiveness. Until these steps are taken, those interested in such research can contribute to the development of theory by trying new attacks on the problem. Any such new attacks should, however, be narrowly limited in scope and should be built upon the analytical framework set forth on pages 644-654 of this report.

1. The research worker who is interested in developing hypotheses to be tested would do well to engage in a great deal of classroom observation. Seeing children in action, watching their behavior, not-

ing their interactions with each other and the teacher, and trying to interpret the observed relation between teacher behaviors and pupil behaviors may lead toward a rationale concerning relationships to be investigated. If the dimensions of the effective teacher are to include the teacher's classroom behaviors, there is no better medium for selecting such behaviors for study than the process of observing them and their effects.

2. It may be possible to locate a number of teachers for each of whom evidence is available that they stand high in their effect on a given dimension of pupil behavior, say work skills, or social sensitivity, or the ability to plan projects. It may be possible to locate another group of teachers for each of whom there is evidence that they are low in their effect on the same dimension. Here we have the possibility of another mode of attack—finding *what* it is about the two groups of teachers that explains the difference in their effectiveness: what is common to the first group that is lacking in the second group; what is common to the second group that is lacking in the first group. The explanation of the differences between the two groups of teachers in their effects on pupils would contribute to a theoretical framework for understanding teacher effectiveness.

Many studies of this type might be planned varying the pupil dimension which is the criterion. It may be necessary to repeat the study involving any one criterion to determine the extent to which the findings can be generalized for different kinds of pupils, kinds of educational programs, and other variables.

3. Another attack on the problem is through controlling a teacher dimension. A controlled experiment can be set up in which teachers will be trained to behave in specified ways in the classroom. The "behavior" may be a technique for teaching an element of subject matter or an attitude (dominative-integrative behavior) or an aspect of classroom climate ("autocratic-democratic" control). With the teachers carrying out the roles which they have learned to play, it will then be necessary to measure the effects on the behavior of pupils—again taking into account the possibility of generalizing the revealed relationship for different kinds of pupils, community influences, educational programs, etc.

In this kind of controlled experiment, it will be important to investigate the contribution to the effect on pupil behavior of the teacher's personality structure, the role he is playing, and the interaction between the two.

4. Yet another possible type of study will investigate the relation between a given teacher dimension and one or more pupil dimensions, using a random selection of teachers. Here the teacher dimension might be, for example, the teacher's social adjustment, or his ability to estimate pupils' social values, or his understanding of arithmetic

processes. The pupil dimension should be hypothesized to be subject to effect from the teacher dimension. The analysis of the data would need to take into account differences among teachers in pertinent variables as well as differences among pupils, types of educational program, types of school administration and supervision, and the like.

These are only a few of the possible approaches. They seem to the Committee to be the kinds likely to be justified by a sound theoretical framework, which would make it possible to select related dimensions on a rational basis. But in the long run a discussion of such approaches points up all the more need for the intensive antecedent thinking that must be done. The total possible amount of research in this area that might be conducted is virtually limitless. Our major concern, then, becomes one of reducing the field of possible relations to the relatively few which could be of crucial theoretical importance —those most likely to give us fruitful results, evidence for those patterns of teacher effectiveness which are of most general value.

The Future of Research on Teacher Effectiveness

Research on teacher effectiveness is still hampered by the lack of the kind of armchair "theorizing" which has until about a decade ago restricted psychological research in the United States. With this conviction as the essence of its point of view, the Committee arrived at the basic conclusion that:

1. An interdisciplinary committee should be created composed of leading theorists in such fields as interpersonal relations, social behavior, group processes, learning theory, and personality dynamics.
2. This committee should be confronted with the problems of research on teacher effectiveness and provided with the financial resources necessary for developing a systematic conceptual basis for research on teacher effectiveness.
3. This committee should then translate its theoretical framework into a program of research, or propose the medium for planning and conducting the research.

Research on teacher effectiveness is a part of the field of research on social behavior. Those who do research on teacher effectiveness would therefore be wise to enlist the aid of theoretical and methodological competencies in the fields listed above as well perhaps as other fields. This means that there should be called together, for joint planning, a limited group of individuals, representing these theoretical orientations, to chart a sound course for future research on teacher effectiveness.

The present Committee, whose membership is drawn largely from the fields of educational research and educational psychology, recognizes its limitations in meeting the requirements of the task as it conceives the task. In other words the Committee did not include within itself sufficient competencies in the areas of human relations for the purpose of creating the necessary theoretical framework. It is likely that research workers in any other specific area of social behavior, such as effectiveness in group social work, military leadership, or industrial supervision, would similarly lack the broad range of competencies needed for adequate planning.

The Committee recognizes that research workers in an area as complex as teacher effectiveness either can attempt to acquire for themselves the necessary theoretical frameworks, or they can attempt to profit from the available competence of workers in relevant basic disciplines. The present choice of the Committee between these alternatives is the second of these two.

Towards a Theoretical Framework

Throughout both reports of this Committee has run the conviction that the present condition of research on teacher effectiveness holds little promise of yielding results commensurate with the needs of American education. This condition has two significant characteristics: disorganization and lack of orientation to other behavioral sciences. By disorganization, we mean the condition in which, at present, research too often proceeds without explicit theoretical framework, in intellectual disarray, too often to the testing of myriads of arbitrary, unrationalized hypotheses. The studies too often interact little with each other, do not fall into place within any scheme, and hence add little to the understanding of the teaching process. The simple fact of the matter is that, after 40 years of research on teacher effectiveness during which a vast number of studies have been carried out, one can point to few outcomes that a superintendent of schools can safely employ in hiring a teacher or granting him tenure, that an agency can employ in certifying teachers, or that a teacher-education faculty can employ in planning or improving teacher-education programs.

In the preceding section, we have offered suggestions that may contribute to better intellectual organization, i. e., to a theoretical framework. We here suggest a path that could lead not only to better organization but also to better liaison with the theoretical and empirical developments in the behavioral sciences at large: educational, social and clinical psychology, group dynamics, social anthropology, learning theory, and personality dynamics. Teacher effectiveness belongs to the family of problems with which these disciplines are concerned. Research on teacher effectiveness should interact conceptually with all relevant scientific disciplines, e.g., personal and interpersonal perception, psychotherapy, small group processes, socialization, and ego development. The Committee sees the present level of interaction as inadequate. Despite the far from complete theoretical integration of concepts in these related areas, they could enrich and inform research on teacher effectiveness much more than is now the case.

Recommendations

What can be done to achieve the desired organization (theoretical framework) and the liaison with other behavioral sciences that would contribute to such organization? The Committee recommends as follows:

1. The AERA should sponsor the formation of an interdisciplinary committee on research in teacher effectiveness. This committee should be composed of authoritative representatives from the fields of social psychology, clinical psychology, and social anthropology; practitioners such as the teachers themselves and administrators as well as from the ranks of researchers on teacher effectiveness. This committee should hold extended physical meetings, interspersed with periods of individual activity for further intensive analysis of theoretical issues raised in the meetings.
2. One goal of this committee should be a systematic theoretical framework for research in teacher effectiveness, expressed in terms of concepts and principles common to the behavioral sciences. A second purpose of the committee should be to make recommendations concerning the proper means for translating the theoretical framework into a program of research activity. That is, the committee should consider the problem: how can research on teacher effectiveness best be organized to avoid the evils of lack of coordination, on the one hand, and excessive coordination that stifles creativity, on the other?
3. Other organizations concerned with the behavioral sciences should be approached by the AERA for cooperation in the formation and support of the proposed committee. In particular, the present Committee recommends that liaison for this purpose be effected with the Social Science Research Council.

EVALUATION OF SEVERAL TEACHING METHODS BY ADULT STUDENTS*

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THE PRESENT STUDY was conducted to determine the relative productiveness of several instructional techniques used in one school of a military university with the mission of providing education for the successful accomplishment of executive functions.

The study is presented here because the procedures used in, and the results of, the study at least should be of interest, if not of value, to evaluation specialists confronted with the requirement for evaluating the attitude of students toward teaching activities or methods. Although the study was conducted in a military situation, the activities discussed are fundamentally analogous to those used in civilian institutions. Furthermore, the study appears to have the following unique characteristics. First, teaching activities rather than the individual teachers were rated by the student; and, secondly, the students making the ratings were mature students with a background of several years of professional military experience. Reasons given by these students for high or low rating of a teaching procedure make the data useful for understanding adult preferences or rejections of the activities involved.

The results of the study were used in the operational situation as one basis for improving procedures used by individual instructors responsible for presentation of curricular content, for modifying the general conduct of certain of the activities and for expanding or limiting the use of any one activity where it seemed desirable or feasible to do so.

Description of Activities

Characteristic of the progressiveness of the school in which the study was conducted, the instructional techniques used are intended to simulate field conditions insofar as this is possible in a school setting. They form the basis of this study and are described below.

The lecture is a period which simulates the presentation to individuals in key administrative posts of subject-matter of current concern

*Personal views or opinions expressed or implied in this publication are not to be construed as carrying official sanction of the Department of the Air Force.

to them. As the name implies, it corresponds closely to the same technique as used in colleges or universities. The entire class of about three hundred students attend lectures made by regular staff instructors or by guest speakers.

The *lecture-discussion period* simulates a gathering of all key individuals in an organization to discuss views and formulate policy pertinent to the current concerns of the organization. For this meeting the class is divided into groups of about eighty each. A staff member assigned to each group elaborates upon material covered in lectures and indicates the implication of this material to the conduct of duty assignments. Student participation is in the form of limited questioning from the floor and occasional panel discussions. This period corresponds most closely to the discussion period led by teaching assistants or instructors following lectures made by professors in a university.

The *seminar* is a period in which a designated committee meets to discuss and prepare a report on a theoretical organization problem. Student participation is maximized in this activity which is dominated by the student although direction is given by instructors. The committee is comprised of about sixteen students. The membership of each committee remains the same throughout the course. This activity corresponds to seminars held in civilian educational programs.

The *staff exercises* are comprised of periods of instruction simulating a gathering of staff executives working as a *team* of individuals, each with specific functions, to discuss and formulate policy pertinent to current concerns of top administration of an organization. Student participation is at a maximum in this activity. Each individual, assigned a specialized function, contributes his part to the solution of a realistic problem. This activity is somewhat analogous to a case clinic used in guidance programs.

The *demonstration procedure* is used to illustrate step by step, the solution of a unique kind of problem or the use of a technique or procedure. The student follows the demonstration made by the instructor and then individually applies the procedure to a similar problem.

The activities discussed above represent relatively specific instructional techniques used in the presentation of general course content. One other method is used in the teaching of communication skills (reading, writing, and oral expression). This method is included with the recognition that it represents a complex of activities but which is specialized enough to represent an independent method of teaching. For example, the periods devoted to *writing training* require staff studies (comparable to research papers) written by each student according to accepted principles of writing and format; the periods devoted to *oral expression* require student participation in the form of individual oral presentations critiqued by other students; and the periods devoted to reading improvement require individual use of the tachistoscope, reading rate controller, and reading exercises, in addition to the understanding of principles of improving reading habits.

Procedure

The ultimate evaluation of these teaching methods depends upon a continuous series of controlled experiments; however, such studies would necessarily involve long periods of time before data would be available for use. Pending the conduct of these studies, a survey of student opinions concerning the productiveness of the activities was therefore selected as the procedure for initially determining the effectiveness of these methods. The survey seemed feasible because data would be immediately available for use and would not involve major changes in class organization. In addition, the survey appeared to be a legitimate point of departure on the assumption that student attitude is an important functioning factor in the learning situation.

The questionnaire used to evaluate these activities was constructed around ratings and questions to arrive at opinions concerning: (1) the one most productive and the one least productive of all listed activities, (2) the reason why one activity was considered most or least productive of all activities, and (3) the degree to which each activity was productive. The questionnaire is reproduced below.

(a) On the average, about what proportion of the time that you spent in each of the following instructional activities do you feel was satisfactorily productive?

	Almost All	More Than Half	About Half	Less Than Half
(1) Lectures	1____	2____	3____	4____
(2) Demonstrations	1____	2____	3____	4____
(3) Discussion periods	1____	2____	3____	4____
(4) Seminar	1____	2____	3____	4____
(5) Individual training—oral expression	1____	2____	3____	4____
(6) Individual training—writing	1____	2____	3____	4____
(7) Staff exercises	1____	2____	3____	4____
(8) Individual training—reading*	1____	2____	3____	4____

*Rate the reading laboratory only if you took the course, otherwise omit this rating.

(b) Which one instructional activity do you think was the LEAST productive of all the activities listed above?

Why did you think this activity was less productive than any of the others? (Please be specific.)

(c) Which one instructional activity do you feel was the MOST productive of all those activities listed above?

What one or two things about this activity made it more productive than any of the others? (Please be specific.)

The questionnaire was administered anonymously to four classes of students, hereafter described as Classes A, B, C, and D, attending an advanced course for education in the successful conduct of staff functions at the executive level. All of Class B and one-half of Classes A, C, and D received the questionnaire described here. Where the entire class was not involved, the questionnaire was randomly distributed. Moreover, Classes A and B were not reuqired to indicate the most or least productive activity.

The total population involved has an N of 734. This group had an average of nine years of professional military experience. Their average age was thirty-five years, and they had an average of two and one-half years of college education.

During the conduct of the study, certain major changes occurred in the conduct of the course. The course when attended by Classes A and B was six months in length, and when attended by Classes C and D was four months in length. The reading improvement program was required of all students in Classes A and B, but was placed on a volunteer basis for Classes C and D. The activities used in both years were identically the same. The subject-matter areas covered for all classes were similar except that a proportionately smaller amount of time was devoted to each area in the shorter courses. The conduct of the shorter courses required not only a greater concentration of subject-matter but more individual study by the student outside of the classroom. Data for the short courses are presented separately from data for the longer courses in Table II.

Limitations

The limitations of this study are: (1) student opinion rather than performance in terms of expected outcomes is the basis for evaluating a method; (2) the quality of the methods is not subject to control; (3) the adaptation of an instructional method to expected learning outcomes was not necessarily equally appropriate; and (4) the teacher performing the method of instruction was not subject to control.

Although a formal provision for the fourth limitation was not made, it is not likely that the ratings reflect reaction to individual teachers conducting the method. Each instructor used many, and in some cases all, of the activities. In addition, specific instructors varied from class to class. It may be assumed that bias toward individual teachers is randomly distributed.

Ratings of activities are not intended to replace ratings of individual teachers already adequately described by Remmers, Riley, and others. (1, 2).

Results

In Classes C and D, and over-all comparison of the relative productivity of the eight activities is reflected in student response to the questions: (1) Which one instructional activity do you think was the MOST productive of all those activities listed? and (2) Which one instructional activity do you think was the LEAST productive of all activities listed? The percentages of students selecting any one activity as the most productive and as the least productive are shown in Table I.

The activities checked by relatively large percentages of students as being the most productive and by small percentages as being the least productive may be considered to have the stronger student appeal. Conversely, activities checked by relatively larger percentages of students as being least productive, and by small percentages as being most productive, may be considered to have the lesser student appeal.

It should be noted that the data in Table I merely indicates that one activity is preferred to another. In this sense, they are relative ratings only. The data in the table is not to be interpreted as indicating whether the students consider an activity as good or bad, in an absolute sense.

The consistency, between classes, with which students from two classes rate these activities as more or less productive is a notable feature of the data shown in Table I. If the class were evenly divided concerning their opinions about each of these activities, it would be expected that about 12½ percent of the class would respond that any one of the activities was either most productive or least productive. However, about twice the number in each of the classes studied indicated staff exercises and lectures as the one most productive activity. The seminar was also considered as the one most productive activity by a significantly large percentage of the classes. On the other hand, discussion periods, writing training, and oral expression training were considered to be among the least productive activities by a sig-

TABLE I

OPINION CONCERNING THE RELATIVE PRODUCTIVENESS OF EIGHT INSTRUCTIONAL METHODS

	Percent indicating the activity as:			
	The One Most Productive		The One Least Productive	
	Class C N = 143	Class D N = 130	Class C N = 143	Class D N = 130
Staff exercises	29%	26%	1%	8%
Lectures	24	28	4	6
Seminars	19	20	4	10
Demonstrations	8	9	2	4
Individual training in reading*	0	1	2	5
Lecture-discussion	2	1	16	18
Individual training in writing	3	3	27	23
Individual training in oral expression	3	5	34	19

*N = 45 for Class C; N = 49 for Class D.

nificantly large percentage of the classes.

Responses to the rating scale section of the questionnaire provide information concerning the degree to which students believed an activity was productive. Students were required to check on a four-point scale whether more than half, half, or less than half the time spent in an activity was productive. The responses are indicative of student opinion regarding the extent to which the school realized the potential of a given instructional procedure. The percentages of students checking each response category for each of the instructional activities are shown in Table II.[1]

The remaining part of this section of the report will be devoted to a discussion of each of the instructional activities and student reasons why each of these activities was considered most productive or least productive of the eight activities studied.

Staff Exercises.—The staff exercises provided opportunity for working as an integrated unit, comprised of several specialized functions, on a problem closely simulating actual job conditions. These exercises also provided an opportunity to use in actual practice the various knowledges and skills derived from participation in other activities of the course.

Attitude toward this activity was more favorable than to any of the other activities studied. The few students in Classes C and D who thought this activity was the least productive one failed to give reasons. On the other hand, students gave the following reasons why this activity was considered the most productive one:

> The exercises showed the need for integrated staff action.
>
> Taught us how to work in coordination with others.
>
> Provided the opportunity to perform duties in each specialized function and to work out of the individual's immediate field.
>
> Provided opportunity to apply knowledge [illegible] a realistic [illegible] problem.

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[1] The internal reliability of the questionnaire was determined by calculating the ratio of corrected number of agreements between the two sections of the questionnaire and the total number of possible agreements. The coefficient of agreement for Class C was .82 and for Class D was .85. Coefficients were not determined for Classes A and B since they were not required to indicate the most productive and least productive activity.

TABLE II

RATINGS MADE BY STUDENTS IN LONG AND SHORT COURSES OF EIGHT INSTRUCTIONAL METHODS

Instructional Method	Classes*	N	Amount of Time Considered Productive			
			Almost All	More Than Half	About Half	Less Than Half
Staff exercises	A, B	462	64%	20%	13%	3%
	C, D	272	50	35	11	4
Lectures	A, B	461	41	41	14	4
	C, D	269	31	44	18	7
Seminars	A, B	458	30	34	22	14
	C, D	271	36	36	20	8
Demonstrations	A, B	461	43	30	18	9
	C, D	271	37	40	15	8
Individual training in reading	A, B	460	18	15	22	45
	C, D	94**	42	20	15	23
Lecture-discussion	A, B	463	17	27	38	18
	C, D	281	27	30	23	20
Individual training in writing	A, B	454	25	21	23	28
	C, D	282	24	22	20	34
Individual training in oral expression	A, B	458	41	20	22	18
	C, D	281	35	18	18	29

*Classes A and B attended the six-month course and Classes C and D attended the three-month course.

**The individual training in reading was required of all students in Classes A and B but placed on a volunteer basis for students in Classes C and D.

The reasons provided by the students reflect the opportunity to meet their important career needs and the opportunity to learn through active participation in this kind of teaching action. Thus, teaching techniques involving students in functional learning groups not only provide practice in such skills as problem solving and human relationships but also result in better student attitude.

Lectures. —The lecture in the school followed the general method used in the college lecture for presenting course material. The lecture as used in the course in which the study was conducted was directive. Opportunity for discussion was not provided during the lecture period.

The majority of students (about three-quarters of the population) believed that "more than half" or "almost all" the time spent in lecture periods was profitable.

Practically all the students who selected this activity as the one most productive activity stated that the reason for this choice was that lectures were the most efficient and effective way for broadening their knowledge in subject-matter areas. Correlated with this reason and with the favorable ratings was praise for the quality of the lecture.

Some typical comments made by students about the lecture are as follows:

> I experienced all of the lectures, whereas in some other activities I experienced only a part of the whole because of the division of labor.
>
> Information given from the lecture platform was given systematically.
>
> Presentations in most cases clearly initiated me to matters heretofore hazy in my mind.

The small proportion of students (about 3 percent) who felt that this activity was the least productive activity gave their criticisms primarily in terms of the quality of presentation, including insufficient preparation and lack of instructor interest in the subject.

The data and reasons concerning the productivity of the lecture indicate that the lecture, for adult populations, can be both efficient and effective for meeting course objectives involving the understanding of basic information. In addition, only may imply that, for some students at least, the lecture is not a totally passive listening experience but may actually be an active learning experience.

Demonstrations. —The demonstration method of instruction used the step-by-step approach to illustrate the solution of a problem by a preestablished procedure. Students are then provided the opportunity to apply this procedure to new problems.

Students rated the productivity of time spent in this activity as favorably as they did the lecture and almost as favorably as the staff exercises. Their reasons, where they indicated this as the one most productive activity, are illustrated in the following typical comments:

> The knowledge and experience was received in a way which aided retention.
>
> Easily understood and most interesting.
>
> You learn by seeing and doing.
>
> By illustration one absorbs more of the subject-matter.

As might be expected some students criticized the manner in which the technique was used. On the other hand, the only criticisms of the activity as a teaching procedure are illustrated by this response:

> All of the necessary detail required to solve a problem cannot be artificially led into the problem.

Lecture-Discussion. —The lecture-discussion period in the administration of the course follows the lecture period for further discussion of subject-matter. The discussion was carried on by the instructor with large groups of seventy or eighty students. Some student participation is possible. These periods require more spontaneous perfommances on the part of the instructor than do lectures.

Students who felt that this activity was the one most productive activity liked the permissive atmosphere, "crew-cut" answers, and open discussion of this period. A typical comment was:

> The group was smaller than for the lecture period and we could get questions answered.

The two criticisms made by large proportions of students about this activity reflect the difficulties in conducting the lecture-discussion period. One criticism was that the lecture-discussion periods were repetitive of what had been accomplished in other activities without making new contributions. The following quotations from the questionnaires are typical: "The discussions merely reviewed what was accomplished in seminars." "The discussions gave unnecessary review of subject-matter already well covered in the lecture hall." Another criticism was that the discussion meetings appeared unplanned and without clear objectives. Some students said, "The discussions did not make definite presentations in an orderly manner." Others said, "No purpose in mind, objectives were vague and problems discussed were not clearly defined."

Seminars. —The seminar periods were meetings conducted regularly to continue discussions of problems stimulated by the lecture presentations. The responsibility for the conduct of the seminar remains primarily with the students under the guidance of the instructor. The seminars are composed of a team of twelve to sixteen members.

This teaching method was very favorably accepted by this adult group. The reasons given by those students selecting this as the one most productive activity indicate that this teaching procedure not only meets the career and job needs of individuals at their administrative level but also probably helps to develop skills in group participation and critical thinking. Students said the following were beneficial outcomes of the seminar:

> Taught individuals to evaluate others' ideas.
>
> Enabled individuals to test their own ideas.
>
> Permitted and encouraged original thinking.
>
> Provided opportunity to share experiences of other individuals.
>
> Made individuals more tolerant of people with different points of view, enabling them to work harmoniously together.
>
> Trained individuals to cooperate with one another and to participate constructively in solving a common problem.
>
> Provided good practice for working on committees in the future.

The small percentage of individuals who claimed this procedure was the least productive one gave the reason that the discussion appeared unpointed at times.

Individual Training Periods. —The individual training method was used in the teaching of oral expression, writing expression, and reading. This method was rated relatively lower than the other activities. The criticisms made concerning this activity, as used for teaching each of the three areas, revolved about the manner in which the activity was used. These criticisms were highly useful in improving instruction but fail to provide information concerning the intrinsic qualities of individual training as it pertains to the teaching of adults. One criticism of the procedure was: "Insufficient time devoted to this procedure to make more than a slight impression on individuals."

This teaching procedure was primarily intended for use in "refresher" segments of the course to bring all students up to a specific level of performance. The amount of time allotted to the communication areas was kept to a minimum. Consequently, it might be expected that the ratings would be lower than they would have been if more time was devoted to this activity. In addition, it is interesting to notice that when individual training in reading was placed on a volunteer basis (Table II) ratings were more favorable than when required of all students.

Favorable comments about this activity were directed toward improvement in a skill in which students believed they were previously deficient.

Summary

This study was concerned with the opinions of a mature adult population about the productiveness of several instructional methods used in a course to develop executive ability in the military situation. These students rated each of the instructional methods on a four-point scale, indicated which was the one most productive and one least productive activity, and gave reasons why they rated an activity as most or least productive.

Based on the opinions of the group studied and for the particular course in which the study was made, it appears that lectures, planning staff exercises, seminars, and illustrative presentations are most favorably accepted.

Students felt that these teaching methods were efficient ways of broadening their knowledge, provided active participation, provided activity related to their career needs, provided realistic situations in which to learn, or allowed them to put into practice principles and theory learned in other situations.

On the other hand, students felt that the discussion method used with large groups and individual training periods were relatively less productive than the other methods. Their criticisms concerning these activities centered around the manner in which the method was conducted. Individual training when placed on a volunteer basis appears to be more acceptable than when required of all students.

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2. Riley, John W., Jr., Bryce F. Ryan, and Marcia Lifshitz, The Student Looks at His Teacher (New Brunswick: Rutgers University Press, 1950).

THE PREDICTION OF TEACHING SUCCESS FROM WORD FLUENCY DATA*

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ATTEMPTS TO predict success in teaching from various kinds of intellectual and personal data obtained during the pre-service training period constitute a considerable body of research in education. In the course of one such study, currently being conducted at the University of Wisconsin, a battery of fluency tests was administered by the author in December, 1949, to 112 undergraduate students. Of this group, 38 men and women began teaching in secondary schools and were visited by observers from the University for the purpose of evaluation during October, November, and December, 1950. The fluency tests were administered with the dual purpose of determining the number and nature of word fluency factors, with the hypothesis that fluency is not a single ability, and of finding out the relationship between word fluency and teaching success. Teaching obviously involves oral fluency, and while the relationship between oral and written fluency is not entirely clear, it appears logical that written fluency ability should be related to teaching success, as defined by some general supervisory rating. It is also possible that fluency is one of a syndrome of personality traits that is associated with success in teaching, although research on prediction has not dealt with this kind of hypothesis. However, word fluency has been identified with some certainty as one of a group of mental traits or abilities,[1] and a number of studies may be cited which have used various kinds of intellectual data to predict teaching success.

Since the present study is concerned with the prediction of in-service supervisory ratings from fluency data obtained during the pre-service training period, only those reports of research meeting the following conditions appear to be pertinent:

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*The present study may be viewed as one in a continuing series of studies of the measurement and prediction of teaching efficiency, carried out at the University of Wisconsin under the general direction of Dr. A. S. Barr. Major credit should be given Dr. Chester W. Harris, at whose suggestion both the original fluency study and the present prediction study were undertaken. Acknowledgment should also be given to the following persons, who were the principal participants in the program of visitation and evaluation of the beginning teachers used as subjects in the study: Jacob O. Bach (Southern Illinois University), Harley E. Erickson, Glen G. Eye, Bernice J. Jones, Tom A. Lamke, and Thomas A. Ringness, of the University of Wisconsin.

[1] L. L. Thurstone, *Primary Mental Abilities*. Psychometric Monographs, No. 1 (Chicago: University of Chicago Press, 1938).

1. Data for prediction consisting of intellectual measures, such as intelligence test scores and grade point averages, obtained during the pre-service training program.
2. Subjects in the study consisting of teachers graduated from four-year college programs.
3. Criterion data consisting of in-service supervisory ratings.
4. Correlation techniques employed.

Six studies which appeared to meet these conditions are summarized in Table I.

It will be noted that the correlations given in Table I are generally positive, but low. Correlations between intelligence and supervisory ratings ranged from -.17 (for 19 cases, however) to .33, with five of the eight coefficients equal to .1. Correlations between college grades and supervisory ratings tended to be somewhat higher, ranging from .19 to .44 (the latter again based on 19 cases), with three of the six coefficients equal to .2. Correlations between the Cooperative Reading Test and supervisory ratings ranged from -.12 to .24, with three other language test correlations between these extremes.

The reading and English tests are, of course, measures of verbal ability; however, this ability has been shown to be different from fluency ability.[2] Also, the various tests of intelligence used by the several investigators are highly verbal in content. It should be pointed out that no attempts were reported to predict teaching success from scores on various mental traits, such as Thurstone's "primary mental abilities," that are combined to give the conventional total score on intelligence tests. The low correlations cited in the above studies may possibly be a function of the use of this omnibus score, in place of scores for the various traits.

Word fluency ability is one such mental trait that has been studied intensively by investigators who were not concerned with prediction. Following the identification of verbal relations (V) and word fluency (W) as independent abilities by Thurstone,[3] other investigators, including Carroll[4] and Taylor,[5] have been successful in identifying several independent types of word fluency ability. The analysis of the fluency data obtained for the present prediction study, which also resulted in the identification of several fluency factors, has been reported elsewhere.[6] The latter study was designed to test the hypothesis that the three fluency factors obtained by Taylor would be found in an analysis of similar data obtained from a different sample, and, since Taylor's factors were again identified in the course of a more extensive analysis, it appeared reasonable to use a number of scores representing the various fluency factors in the prediction of teaching success. The hypothesis seemed tenable that ideational fluency would correlate higher with supervisory ratings than verbal versatility and non-ideational measures of fluency. However, since no previous exploration had been done in this area of prediction, scores representing a wide range of fluency behaviors were used.

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[2] Thurstone, *op. cit.*
[3] Thurstone, *ibid.*
[4] John B. Carroll, "A Factor Analysis of Verbal Abilities," *Psychometrika*, VI (December, 1941), pp. 279-307.
[5] Calvin W. Taylor, "A Factorial Study of Fluency in Writing," *Psycho-*

Briefly, six tests representing the three independent fluency factors identified by Taylor[7] were administered to the sample described above. Suffixes and first and last letters were used to test word fluency (W), synonyms and the letter-star test for verbal versatility (K), and adjectives and things round for ideational fluency (F). In addition to the quantity scores for these tests, used by Taylor, several other types of score were obtained from the Wisconsin test papers. It was realized that such scores are not experimentally independent, in that they are based on the same sets of responses as the quantity scores. Therefore, two analyses were made, the first including the eight independent quantity scores from the six tests (separate scores were obtained for each of the three columns of responses on the synonyms test, thus giving two addtional variables), and the second including a total of 17 scores, at least two from each test. Four independent factors were obtained in the first analysis, with the additional variables obtained from the synonyms test accounting for the factor not present in the Taylor analysis. The analysis of the 17 variables, which included such additional scores as word complexity and popular responses, gave eight independent factors. In addition to the two factors obtained for the synonyms test, one factor each was contributed by things round, adjectives, first and last letters, and suffixes, while the five scores from the letter-star test accounted for two factors. Each factor included one test which could be considered factorially pure, in that it had a correlation with only that one factor.

Six variables representing six of the eight factors obtained in the total analysis were selected initially to be correlated with the ratings

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metrika, XII (December, 1947), pp. 239-262.

[6] D. M. Knoell and C. W. Harris, "A Factor Analysis of Word Fluency," *Journal of Educational Psychology* (in press).

[7] Taylor, *op. cit.*

TABLE I

SUMMARY OF SELECTED STUDIES

Author	No. of Teachers	Variables Used to Predict	Correlation with Criterion
Anderson[1]	529	High school grades	.12
		College grades	.19
Breckenridge[2]	215	Intelligence (Army Alpha Test)	.07
		College grades	.35
Hult[3]	19	Intelligence (Henmon-Nelson Test)	-.17
		College grades	.44
		Cooperative Reading Test	-.12
Jones[4]	65	Intelligence (Henmon-Nelson Test)	.11
		American Council on Education Psychological Examination	.10
		College grades	.24
		Cooperative Reading Test	.12
Lins[5]	58	Intelligence (Henmon-Nelson Test)	.14
		American Council on Education Psychological Examination	.24
		College grades	.31
		Cooperative Reading Test	.24
		Cooperative English Test	.22
		Speech course grades	.07
Phillips[6]	324	Intelligence (Ohio State University Psychological Examination)	.33
		College grades	.19
Pyle[7]	57	Intelligence (Detroit Examination)	.01

1. H. J. Anderson, ‘‘Correlation Between Academic Achievement and Teaching Success,’’ Elementary School Journal, XXXII (September, 1931), pp. 22-29.
2. [illegible] Breckenridge, ‘‘A Study of the Relation of Preparatory School Records and Intelligence Test Scores to Teaching Success,’’ Educational Administration and Supervision, XVII (December, 1931), pp. 649-660.
3. Esther Hult, ‘‘Study of Achievement in Educational Psychology,’’ Journal of Experimental Education, XIII (June, 1945), pp. 174-190.
4. Ronald D. Jones, ‘‘The Prediction of Teaching Efficiency from Objective Measures,’’ Journal of Experimental Education, XV (September, 1946), pp. 85-99.
5. Leo J. Lins, ‘‘The Prediction of Teaching Efficiency,’’ Journal of Experimental Education, XV (September, 1946), pp. 2-60.
6. Wendell S. Phillips, An Analysis of Certain Characteristics of Active and Prospective Teachers (Nashville, Tenn.: George Peabody College for Teachers, 1935).
7. W. H. Pyle, ‘‘Intelligence and Teaching: An Experimental Study,’’ Educational Administration and Supervision, XIII (October, 1927), pp. 433-448.

on teacher success. They are, with the numbers assigned them in Table II, the quantity score for suffixes (1); synonyms, first column (2); synonyms, third column (4); letter-star, number of commands (6); letter-star, words of two or more syllables (7); and the quantity score for the adjectives test (8). Later, synonyms, second column (3); the quantity score for the letter-star test (5); and the quantity score for things round (9) were added to the original set of variables which was correlated with the criterion.

Description of the Rating Devices

Three types of rating were obtained for each of the 38 teachers. First, a rating of acceptability, defined as "the quality of the teacher which leads other people to feel that she should be retained in her present position or possibly promoted to a more responsible assignment,"[8] was given the teacher by a University observer at the conclusion of a standardized interview with the principal or superintendent of the school in which the teacher was observed. The rating, which was agreed upon actually by both the principal and the oberver, was made on a five-point scale: (1) among the best, (2) above average, (3) average, (4) below average, and (5) failing as a teacher. Second, a general evaluation on a similar five-point scale was given by the principal or superintendent, in the course of filling in selected items from the Wisconsin adaptation of the M Blank.[9] Finally, the same general evaluation on the adaptation of the M blank was given by each of two representatives of the University, who observed at least one class taught by the teacher in question and also conducted an interview with the teacher. It should be noted that the two types of rating were given by 38 different principals and superintendents, although the same person gave both the acceptability rating and the general evaluation on the M blank, and that 19 University observers participated in the third rating. Thus different sets of standards were undoubtedly applied in the ratings of the 38 teachers, which probably gives rise to some type of inter- and intra-rater correlation within any one type of rating. However, the question of the reliability and objectivity of the ratings is not the concern of the present study. It should be noted, however, that the correlation between the principals' or superintendents' acceptability and M-blank ratings was found to be .80; between the M-blank ratings by the two University observers, .82; between the acceptability rating and the University observers' M-blank rating, .66; and be-

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[8] Tom A. Lamke, Jacob O. Bach, and Thomas A. Ringness, unpublished mimeographed material.

[9] Mimeographed material adapted from the rating blank for teachers (M) of the North Central Association of Colleges and Secondary Schools.

TABLE II

FLUENCY FACTORS AND VARIABLES

Factor				
Taylor*	Knoell-Harris**	Variable No.	Test	Score
W (Word Fluency)	L	1	Suffixes	No. words
K (Verbal Versatility)	M	2	Synonyms	No. words in first column
—	M-N	3	Synonyms	No. words in second column
—	N	4	Synonyms	No. words in third column
K	P G-H	5	Letter-Star	No. responses
—	G	6	Letter-Star	No. commands
—	H	7	Letter-Star	No. words of 2+ syllables
F (Ideational Fluency)	P	8	Adjectives	No. words
F	Pa	9	Things Round	No. words

*Calvin W. Taylor, "A Factorial Study of Fluency in Writing," Psychometrika, XII (December, 1947), pp. 239-262.

**D. M. Knoell and C. W. Harris, "A Factor Analysis of Word Fluency," Journal of Educational Psychology (in press).

tween the principals' M-blank and the observers' M-blank ratings, .62. Thus, agreement between the University observers and between the two types of rating given by the principal or superintendent appears to be slightly greater than agreement between the principals and superintendents and the University observers. Also, the mean rating by the observers was somewhat lower than the mean ratings given by the principals, the former being 2.6 on the M blank, the latter 2.1 on acceptability and 2.2 on the M blank.

Analysis of the Data

Since the 38 teachers comprised a sub-group of the sample of 112 students from whom the fluency data were obtained, it was decided to compute the means and standard deviations of the fluency scores for the two groups, in order to find out if curtailment of the distribution was a characteristic of the sub-group. If some score for fluency had actually been the basis for deciding whether or not each student in the total group should enter teaching, then curtailment would have been direct and a correction for this curtailment could be made in the obtained correlation between fluency and teaching success. 10 However, in the present study no such elimination procedure was employed, and curtailment in the sub-group was taken as an hypothesis concerning selection, rather than fact. Also, a relevant question is that of whether students who did not enter teaching are actually at the bottom of the assumed continuum from outstanding to poor teachers. Means and standard deviations for the sub-sample and the total sample are given in Table III. It will be noted that differences in both the means and the standard deviations for the two groups are small, and that the standard deviations for the sub-group tend to be larger than those for the total sample, indicating that curtailment had not occurred.

Each of the nine fluency variables was then correlated with the three ratings of teaching success, the third rating being a combination of the two ratings given by the University observers. The product-moment correlations are given in Table IV. It was noted above that correlations were first computed for variables (1), (2), (4), (6), (7), and (8), which are factorially pure. These correlations ranged from .07 (between the quantity score for suffixes (1) and acceptability, and between the third column of synonyms (4) and the principals' M-blank rating), to .40 (between the quantity scores for adjectives (8) and the principals' M-blank rating). For 38 cases, the standard error of a zero correlation is .16; thus, a coefficient of .32 or greater

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10. Robert L. Thorndike, ed., *Research Problems and Techniques*. Army Air Forces Aviation Psychology Program Research Reports, No. 3 (Washington: Superintendent of Documents, 1947), pp. 63-72.

TABLE III

MEANS AND STANDARD DEVIATIONS FOR SUB-SAMPLE AND TOTAL SAMPLE

Variable[a]	Means		Standard Deviations	
	Sub-Sample (N = 38)	Total Sample (N = 113)	Sub-Sample (N = 38)	Total Sample (N = 113)
1	20.0	19.5	4.5	4.7
2	14.2	13.4	3.3	3.1
3	9.7	9.0	3.0	2.9
4	4.8	4.5	2.9	2.4
5	14.5	13.0	5.1	4.7
6	3.8	3.0	3.2	2.6
7	15.2	13.7	5.5	5.6
8	26.8	25.7	7.4	7.7
9	22.0	21.4	6.8	6.1

TABLE IV

CORRELATIONS BETWEEN FLUENCY SCORES AND TEACHER RATINGS

Factor	Variable	Acceptability Rating	Principal's Rating M Blank	Observers' Ratings*
L	1	.07	.20	.09
M	2	.35	.30	.18
M-N	3	.23	.15	.01
N	4	.10	.07	.10
P	5	.18	.23	.12
G-H				
G	6	.10	.13	.18
H	7	.26	.15	.10
P	8	.35	.40	.39
P	9	.46	.33	.28

*Ratings on the M Blank were given by two observers from the University of Wisconsin. These ratings were added, and correlations were computed between the sum of the two ratings and the fluency scores.

is necessary in order for the correlation to be significantly different from zero at the five percent level. In addition to the three correlations between adjectives (8) and the various ratings, the correlation between the first column of synonyms (2) and acceptability is significant by this standard. Since the second column of synonyms (3) was known to be correlated with the two factors represented in the first choice of variables by the first (2) and third (4) columns of synonyms, and the quantity score for the letter-star test (5) by the factors represented by the number of commands (6) and word complexity (7) scores for the letter-star test, correlations between these additional variables and the three ratings were then computed. It was thought that the two variables that are more complex, factorially, might be correlated more highly with the ratings; however, none of the six additional correlations were found to be significantly different from zero. Finally, correlations between things round (9) and the three ratings were computed, in order to find out if a second measure of factor F, ideational fluency, (the first measure being adjectives), would also be significantly correlated with the ratings. Two of the three correlations were found to be greater than .32, the size needed for significance, thus indicating that ideational fluency ability is significantly correlated with teaching success, defined by a general rating.

Multiple-correlation coefficients for variables (1), (2), (4), (6), (7), and (8) with each of the three ratings were also computed. Since intercorrelations of the six variables were available for the sample of 112 cases[11] from which the 38 cases in the present study were drawn, and since the sub-group appeared to be similar to the total sample with respect to the means and standard deviations, it was decided to use the coefficients obtained for the total sample in the computation of the multiple correlations. For the acceptability rating, R = .48; for the principals' M-blank rating, R = .46; and for the University observers' M-blank rating, R = .45.

Summary

It thus appears that one type of word fluency ability, ideational fluency (F), is significantly correlated with teaching success. Both adjectives (8) and things round (9) correlated at least .3 with each of the three ratings of teacher success: acceptability, the principals' or superintendents' M-blank rating, and the University observers' M-blank rating. It is interesting to note that other identified fluency abilities, Word Fluency (W) and verbal versatility (K), have generally lower correlations with the three ratings, although all obtained correlations are positive. One may infer from these data that good teaching, defined by a general rating assigned by different observers, is more closely related to facility in the expression of ideas than to mere quantity in written fluency.

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[11] Knoell and Harris, op. cit.

Other types of investigation in this area of the prediction of teaching success from word fluency data should include:

1. Separate analyses for men and women teachers, in that the rater may apply different criteria in evaluating men and women teachers, which could give rise to differences in correlations with fluency scores.
2. The relationship between measures of oral fluency and teaching success.
3. The relationship between different types of scores from the fluency tests, e. g., popular responses, responses referring to the first person or to relationships between people, and teaching success.
4. The relationship between fluency scores and ratings of different kinds of teacher behavior.

SOME CHARACTERISTICS OF COLLEGE TEACHERS

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ONE HUNDRED COLLEGE graduates ranging in age from twenty-one to fifty-one inclusive were asked by the writer to characterize the teaching they had received from college instructors on the undergraduate level. There were two reasons for requesting the characterization, the major one being to try out an instrument which is to be submitted at a later date to college and university seniors on many college campuses; the minor one was to study the reactions of one hundred college graduates.

Thirty-seven of the respondents are graduate students in the School of Education of the University of Connecticut; the remaining sixty-three are not presently enrolled in any graduate or undergraduate program and are not teachers. The writer sent questionnaires to one hundred fifty persons scattered over the country who were known to have graduated from college. As soon as one hundred returns were received the investigator tabulated the results.

Forty-nine respondents were over twenty years of age and not older than thirty; thirty-four were from thirty-one to forty; sixteen were from forty-one to fifty; and one respondent was fifty-one years old.

Thirty-seven of the respondents are graduate students in the School of Education at the University of Connecticut and of this number thirty-one are teaching in the public schools. Twenty-one are engaged in small business enterprises of their own such as operating grocery stores, filling stations, garages, clothing stores and farms, all being men. Seventeen are housewives; four are practicing attorneys; one is a physician; two are dentists; and eighteen are employed by companies or corporations in a variety of types of work. Fifty-five of the respondents were men and forty-five were women.

Although no attempt was made to locate the colleges or universities in which the respondents did their undergraduate work the following information was secured from those who filled out the questionnaire:

16 were graduates of a university doing their work in the College of Liberal Arts.
12 graduated from the University of Connecticut in the School of Education.
34 were graduates of privately supported liberal arts

colleges.

5 were graduates of a university doing their work in the College of Home Economics or Agriculture.

20 were graduates of state supported teachers colleges.

1 was a graduate of a school of theology.

4 were graduates of state supported universities doing their work in the School of Business.

8 completed two or three years in private colleges and later graduated from a state supported university in Arts and Sciences.

Each respondent was requested to select two teachers from all his undergraduate college teachers, one whom he would characterize as his best liked teacher and one whom he would characterize as his least liked teacher. He was then asked to apply a check list to each of these teachers, being instructed as follows:

> Read each characteristic at the left carefully. Then ask yourself if the teacher being described possessed this characteristic. If you are sure that the teacher being described did possess the characteristic, circle the "T." If you are sure that the teacher did not possess this characteristic, circle the "F." If you are not sure make no circle for the item.

After completing the check list for the best liked teacher and the least liked teacher the respondents were asked:

1. Was the best liked teacher also your best instructor?
2. Was the least liked teacher also your best instructor?

If answers to both questions were "no," the respondents were requested to recall their best instructor and apply the same check list to this instructor.

[illegible]-three of the respondents stated that their best liked teacher was also their best instructor. None indicated that his least liked teacher was also his best instructor. Twenty-seven described the best instructor as being a different person than either the best liked or the least liked teacher.

After one hundred replies were received the results were tabulated and an index was calculated for each of the sixty-nine characteristics according to the formula:

$$I = \frac{T - F}{N}$$

where T represents the number of times a characteristic was checked T; where F was the number of times a characteristic was checked F; and where N was the total number of evaluations for the given characteristic.

Thus the index varies from +1.00 through 0 to -1.00. If all the respondents who checked a characteristic circled the T, the index would be +1.00, but if all respondents who checked a characeristic circled the F the index would be -1.00. Similarly, if half circled the F and half circled the T the index would be 0. Since the respondents were instructed to check neither the T nor F unless they were reasonably sure that the teacher possessed the stated characteristic it was assumed that if neither the T nor the F was circled that the odds were even on the probability of T or F being checked if the respondent had been required to check one or the other.

Since seventy-three persons stated that the best liked teacher was also the best instructor it appears that the characteristics of the best liked teacher should also be considered as those of the best instructor. It is helpful to note what differences are indicated when the best liked teacher and the best instructor are compared. The results are tabulated in Table I.

The following characteristics were assigned an index of +.50 or better for the best liked teacher but not for the best instructor:

1. Cheerful, happy, good natured, jolly.
2. Gave students chance to make up work.
3. Human, friendly, one of us.
4. Appreciated a good joke on himself.
5. Discovered goals of students and helped them to achieve them.
6. Measured changes in student attitudes.

The following characteristics were assigned an index of +.50 or higher for the best instructor but not for the best liked teacher:

1. He was an effective speaker.
2. He stood up when he taught.

These data seem to reveal that in the main the best instructor is also the best liked teacher and that in the minority of number of cases where this is not true that the differences could easily be eradicated by intelligent self-examination on the part of the teacher.

Each of the respondents was given an opportunity to write a paragraph regarding the best liked teacher, the least liked teacher, and the best instructor. This report does not include the statements by

TABLE I

CHARACTERISTICS OF BEST LIKED, LEAST LIKED, AND BEST TEACHERS

Characteristics	Index Best Liked Teacher N = 100	Index Least Liked Teacher N = 100	Index Best Instructor N = 27
1. Classwork was obviously well planned.	.94	-.51	.55
2. Was easy to talk to outside of class.	.93	-.64	.72
3. Was fair in marking and grading.	.92	-.51	+1.00
4. Had control of his class, commanded respect.	.91	-.16	1.00
5. Required work to be in on time.	.90	-.80	.55
6. Gave personal help to students.	.89	-.72	.67
7. Was skillful in observing student reaction.	.89	-.51	.72
8. Recognized that beginners grope and fail and helped.	.87	-.51	.89
9. Used appropriate examples to clarify theory.	.86	-.12	.89
10. Frank, sincere, a straight shooter.	.85	-.60	1.00
11. Cultured, refined, had good taste.	.84	-.51	1.00
12. Obviously enjoyed working with students.	.83	-.60	.67
13. Could see both sides of a question.	.82	-.56	.89
14. Made rules and regulations clear.	.81	+.53	.89
15. Patient, kind, considerate.	.81	-.72	.89
16. Assignments were clear cut and reasonable.	.80	-.04	.77
17. Prompt, business like, well ordered.	.79	-.12	.55
18. Cheerful, happy, good natured, jolly.	.78	-.51	.33
19. Knew his subject, enthusiastic about it.	.77	+.08	1.00
20. Gave students chance to make up work.	.76	-.32	.44
21. Skillful in leading group discussion.	.76	-.68	.67
22. Skillful in using data to analyze problems.	.75	-.51	.89
23. Insisted upon correct spelling, grammar, etc.	.75	.72	.89
24. Remembered students who made contributions.	.75	-.16	1.00
25. Could take honest criticism.	.74	-.60	.89
26. Required written work to be neat and accurate.	.73	+.64	1.00
27. Had pleasing voice.	.72	-.08	.72
28. Physically vigorous, had plenty of drive.	.71	-.51	1.00
29. Frequently caused group to laugh.	.71	-.51	.89
30. Human, friendly, "one of us."	.70	-.78	.44
31. Modern in his general outlook.	.69	-.51	.67
32. Knew vocational opportunities opened up by subject.	.68	.00	.89
33. Skillful in measuring growth of students.	.68	-.51	.72
34. Appreciated good joke on himself.	.67	-.60	.44
35. Measured achievement in terms of ability to use facts.	.65	-.51	.67

TABLE I (Continued)

Characteristics	Index Best Liked Teacher N = 100	Index Least Liked Teacher N = 100	Index Best Instructor N = 27
36. Personally attractive, well dressed.	.65	-.08	.72
37. Skillful in use of students in planning activities.	.64	-.51	.55
38. Explained why he did things.	.64	-.56	.89
39. Seemed to be proud of his class.	.64	-.51	.55
40. Helped students achieve their own goals in course.	.63	-.52	.33
41. Utilized student opinion in measurement of achievement.	.60	-.75	.55
42. Measured changes in student attitudes.	.55	-.51	.11
43. Evidently knew his students.	.53	-.68	.55
44. Stood up when teaching.	.36	-.16	.89
45. Allowed exceptions to the rule.	.33	+.04	.00
46. Was middle aged.	.30	-.24	.22
47. Was an effective speaker.	.23	-.51	1.00
48. Frequently used audio-visual aids.	.21	-.56	.33
49. Usually gave objective type exams.	.10	+.04	.33
50. Often gave essay type exams.	.00	+.02	-.11
51. Required all students to learn same thing.	.00	+.60	.22
52. Made decisions quickly.	-.04	+.51	.44
53. Joined class in "griping" about things.	-.04	+.51	.00
54. Was youthful.	-.07	-.12	-.11
55. Was old.	-.44	-.32	-.89
56. Imposed his own goals on students.	-.51	+.55	.22
57. Placed primary emphasis upon memorization.	-.51	+.59	-.89
58. Frequently reversed his decisions.	-.55	-.16	-.89
59. Was cross, crabby, sarcastic.	-.71	+.56	-.72
60. Straddled fence on controversial issues.	-.72	+.51	-.55
61. "Flew off the handle" frequently.	-.74	+.53	-1.00
62. Allowed members of the class to get best of him.	-.75	+.51	-1.00
63. Broke rules he wouldn't let students break.	-.76	+.51	-.89
64. Boasted of his own accomplishments.	-.80	-.51	-.55
65. Was lax with his class.	-.81	+.51	-.89
66. Resented disagreement with his point of view.	-.82	+.60	[illegible]
67. Caused students to feel inferior.	-.83	+.60	-.72
68. Was superior, aloof, "high hat."	-.84	+.51	-.55
69. Was apathetic, sluggish, tired, pepless.	-.90	+.51	-1.00

respondents, but one is quoted here to bear out the fact that the differences between the best liked and the best instructor were slight and remedial:

> The major difference between the best liked teacher and the best instructor was one of human qualities. Both knew their subjects, but the best liked teacher was more human and friendly and frequently requested students to confer with him for the purpose of improving the approach being made to the subject. We all felt that if the teacher I have named as the best instructor had been more like the best liked teacher that he would have been an even better instructor than he was.

Summary

1. Based upon the statements of one hundred college graduates the best liked teacher is also the best instructor in three out of four cases.
2. The major difference between the best liked teacher and the best instructor is that the best liked teacher displays more qualities of friendliness and humanness.
3. The best liked teacher and the best instructor have the following characteristics in common:

   a. They plan their classwork carefully.
   b. They require written work to be neat, accurate, grammatically correct, and handed in on time.
   c. They are good classroom managers.
   d. They have a good sense of humor.
   e. They are physically vigorous and have plenty of drive.
   f. They are cultured, refined, frank, sincere, honest.
   g. They are cheerful, happy, and not cross or crabby.
   h. They recognize that beginners frequently grope and fail and are willing to help such students.
   i. They measure achievement largely in terms of the ability to use facts and information in formulating judgments rather than in terms of mere memorization.
   j. They are skillful in utilizing student energy, interest, and ability in planning the learning activities rather than impose such activities upon students.
   k. They utilize student energy, interest, activity, and skill in formulating learning goals for the course rather than impose goals on students.
   l. They utilize student opinion in measurement of achievement.

m. They are prompt, business like, and yet patient, kind, and considerate.
n. They enjoy working with students.
o. They are aware of the vocational opportunities which are opened up to one who has mastered the subject taught.
p. They are willing to take a position on controversial issues.

4. The least liked teacher has the following characteristics:

a. He attaches great importance to the mechanics of having work in on time, correct spelling and grammar, neatness and accuracy, requiring all students to learn the same thing.
b. He lords it over students, resenting any disagreement and causing students to feel inferior; imposes goals of the course on students and frequently "flies off the handle."
c. He places primary emphasis upon memorization.
d. He straddles the fence on controversial issues.
e. He is superior, aloof, high hat, and is often apathetic, sluggish or tired.
f. He breaks rules which he will not permit students to break and yet is lax with his class.
g. He is not human, friendly, patient, kind or obviously interested in his students.
h. He measures achievement in terms of memorized facts rather than in terms of student ability to mobilize facts to formulate a judgment.
i. He has little sense of humor.
j. He brooks no student participation in planning of the course or of evaluation of student achievement.
k. He runs his own show and lets students come to class to get what they can from him. He is not interested in helping students learn.
l. He explains little.
m. He is not cheerful, happy, good natured, or jolly.

Conclusions

It would be erroneous to assume that any definite conclusions could be drawn from so small and sketchy a sample, but it does raise several questions, namely:

1. Are humanness and friendliness too much to expect of

college teachers?

2. Should college teachers be vigorous and be possessed of an abundance of energy?
3. Should college teachers really enjoy working with young men and women?
4. Should college teachers have the ability to plan a course with students instead of authoritatively imposing it upon a class?
5. Should college teachers be patient, kind, considerate, and recognize that groping and failure are likely to occur just as falling is likely to occur when learning to ride a bicycle?
6. Should teachers know enough about the nature of the learning process as disclosed by research to enable them to adjust their own plans and procedures so that learning is most likely to occur?
7. Should college teachers have enthusiasm and vision so that students catch the enthusiasm and see opportunities which arise out of study of a given subject?
8. Should college teachers be willing to submit to a little scrutiny now and then?

TEACHER MORALE AND STUDENT ACHIEVEMENT

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THE GENERAL PROBLEM of morale has received considerable attention in times of national peril. This fact is demonstrated by the numerous discussions of morale in the literature during World War I, the depression of the 1930's, and World War II. Interest in morale seems to decrease rapidly, however, after crises have passed. Reports and discussions concerning morale practically disappeared from the literature after World War I and after the economic recovery in the late thirties. In spite of this decrease in public attention following the passing of crises, low morale, nevertheless, remains a continuing problem in the lives of many individuals. High morale is important in routine day-to-day living as well as in times of emergency.

In this report, attention is directed to the morale problem of the classroom teacher. That such a problem exists is evidenced by the fact that thousands of teachers left the classroom during World War II at the first opportunity, and that those who remained bacame vocal in their dissatisfaction with the profession. It was apparent that when opportunities to leave teaching were made easy and attractive, many teachers were anxious to leave the field.

Various campaigns have been conducted during the past few years through the movies, newspapers, and magazines to attract capable people to the teaching profession. The public seems to be deeply concerned with the lack of adequately trained teachers; it has sensed the dissatisfaction which teachers have felt toward their work and has taken some positive steps toward improving the situation. Yet, it is not infrequent that one hears parents say things which discourage their children from entering teaching. Parents want their children to "amount to something." Even teachers are frequently heard discouraging youth interested in teaching from entering teacher training. The obvious implication seems to be that the problem of teacher morale is in need of immediate attention.

There is little doubt but that the morale of a substantial proportion of teachers has not been high. Such a condition is certainly undesirable. While a state of high teacher morale might well be a virtue in itself, a more important consideration is whether factors believed to have a positive affect on morale are present to a relatively higher degree in schools known to have a high level of student achievement.

With this in mind, a study[1] was made to investigate one aspect of this apparent problem. Granting that a state of low morale is an unhappy one for the teacher personally, the more basic question has to do with the possible effect of such a state on the outcome of instruction. It seems reasonable to assume that the quality of instruction and guidance which our young people receive depends to some extent upon the morale of the person doing the teaching. In other words, does it follow that a teacher who has relatively high morale will teach more effectively than one who has relatively low morale?

Some information regarding the possible relationship between morale and pupil achievement may be obtained by examining schools which have relatively high or low student achievement to determine whether the various factors which are believed to affect morale are present to a high or low degree.

Thus, the study was made of twenty Iowa secondary schools to determine the relationship between teacher morale and student achievement. Selection of school staffs to be studied was made on the basis of student achievement on the Iowa Tests of Educational Development. The mean of the percentile ranks of the composite scores for grades nine through twelve was used as a selection score for the twenty schools.

The twenty schools were divided into two groups of ten each for comparison purposes. One group was composed of ten schools whose selection scores were seventy-five or higher. The second group was composed of ten schools whose selection scores were thirty or less. Thus by eliminating the schools which had a selection score between thirty and seventy-five, there was reasonably good assurance that the two groups selected represented schools which had relatively high student achievement and relatively low student achievement as measured by the Iowa Tests of Educational Development.

The morale scale used to obtain the data was constructed in the form of a multiple choice type examination in which the teacher was asked a question and was given a variety of possible responses from which to select the one coming the closest to representing his opinion regarding the question. An outline of factors considered as affecting morale was prepared by selecting those factors upon which there appeared to be agreement by writers in the field. These factors were used as a table of specifications for the construction of the morale scale. For example, one statement in the outline of factors proposes that the individual must feel satisfied with the manner in which the

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. Anderson, Lester W., *A Study of Teacher Morale.* Unpublished Ph.D. Dissertation (Iowa City: The State University of Iowa, 1950).

community accepts him socially. The following item of the morale scale was constructed to reflect this statement:

> To what extent do teachers participate in the social affairs of your community?
>
> ___1. There is practically no opportunity for teachers to participate in the social activities of the community.
> ___2. Teachers are expected to belong to the more formal groups (church, P. T. A., Y. W. C. A., book clubs, etc.) but they have only occasional opportunities to take part in the more informal activities such as informal social gatherings, parties, etc.
> ___3. Teachers are invited to participate in both formal and informal social gatherings, but somehow teachers do not seem to be fully accepted on equal terms.
> ___4. Teachers are accepted in most social groups, but people usually act a little more formal when teachers are in the crowd.
> ___5. Our community makes its teachers feel as though they really belong and teachers are encouraged to participate in as many social activities as they desire.

The various responses to the questions were constructed to represent varying degrees to which the particular condition or practice being considered prevailed in the school, and the responses were arranged in order, from the lowest to the highest in degrees of prevalence.

Every teacher in the twenty schools was interviewed personally by the investigator in order to assure the teacher that the treatment of his responses would be completely confidential, and to motivate the teacher to give his honest opinion to the questions asked in the morale scale. As a further precaution, each teacher answered the questions in private.

Numerical values were assigned each response so that the teacher's answers could be scored objectively. Thus, it was possible to obtain a morale score for each teacher and for each school.

The major purpose of this investigation was to examine the possible difference between the level of teacher morale in secondary schools ranked high with respect to student achievement and the level of teacher morale in secondary schools ranked low with respect to student achievement. An analysis of variance (school groups within achievement groups) was used to investigate this problem.

Two specific hypotheses were tested. The first was the hypothesis that there are no differences among the mean morale scores for the schools within the achievement groups. This hypothesis was tested by means of an *F-Test*. The appropriate *F* is the ratio of the mean square for schools within achievement groups to the mean square for individual teachers within schools. This hypothesis may be rejected with a level of confidence which is beyond 1%. Rejection of this hypothesis is evidence of the power of the morale questionnaire to differentiate among schools within achievement groups. It also indicates that the mean square for schools within achievement groups is the appropriate term with which to evaluate the difference between the means for the achievement groups.

The second hypothesis tested was that of no difference between the means of the two achievement groups. This hypothesis was also tested by means of an *F-Test*. In this instance, the appropriate *F* is the ratio of the mean square for achievement groups to the mean square for schools within achievement groups. This hypothesis may be rejected with a level of confidence which is beyond 5%. The rejection of this hypothesis is evidence of a real difference between the mean of the teacher morale scores for secondary schools ranking high in pupil achievement and the mean of the teacher morale scores for secondary schools ranking low in pupil achievement. The observed difference favored the group of schools which ranked high in pupil achievement. In other words, teachers in secondary schools whose pupils achieve relatively high scholastically appear to have higher morale than do teachers in schools with relatively low pupil achievement. It seems plausible to assume, therefore, that morale of teachers does make a difference in the scholastic achievement of their pupils. Apparently teachers with relatively high morale can be expected to teach more effectively.

The analysis of variance leading to the tests indicated above is summarized in Table I.

Such results present a challenge to all supervisors and adminstrators of secondary schools to improve those conditions in their schools which affect teacher morale. It appears that now is the time to capitalize on the public's general interest in the maintenance of a high level of teacher morale and to develop a program designed to improve teacher morale.

Another implication of these results is directed to teacher training institutions. Serious attention and study must be given to the selection and retention of new teachers. It appears to be imperative that teacher training institutions consider the problem of enthusiasm for teaching as a prerequisite to entering the field of teaching. It is no longer feasible to ignore the implications of a person's attitudes toward teaching and the quality of instruction which results.

It should not be assumed, however, that focusing attention toward

TABLE I

SUMMARY OF ANALYSIS OF VARIANCE (SUBGROUPS WITHIN GROUPS DESIGN)

Sources	Formulas for Sums of Squares	Sum of Squares	Degrees of Freedom	Mean Squares
Achievement Groups	$\Sigma \frac{T_g^2}{n_g} - \frac{T^2}{N}$	1, 969. 775	1	1, 969. 775
Schools Within Achievement Groups	$\Sigma \frac{T_s^2}{n_s} - \Sigma \frac{T_g^2}{n_g}$	6, 518. 592	18	362. 144
Individual Teachers Within Schools	$\Sigma X^2 - \Sigma \frac{T_s^2}{n_s}$	34, 916. 63	246	141. 938
Total	$\Sigma X^2 - \frac{T^2}{N}$	43, 404. 997	265	

$F = \frac{362.144}{141.938} = 2.551$

Degrees of Freedom = 18, 246

$F_{.01} < 2.09$

$F = \frac{1,969.775}{362.144} = 5.439$

Degrees of Freedom = 1, 18

$F_{.05} = 4.41$

better student achievement through high teacher morale is the only reason for being concerned with teacher morale. Rather, it is only one more vital reason for making every possible effort to provide conditions which will increase the possibilities of developing a high state of teacher morale in all the schools throughout the nation.

THE MINNESOTA TEACHER ATTITUDE INVENTORY AS AN AID IN THE SELECTION OF TEACHERS

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DURING THE PAST FEW years Dr. Walter W. Cook of the University of Minnesota and his students have developed the Minnesota Teacher Attitude Inventory. (3) (Hereafter this instrument will be referred to as the MTAI.) One of the possible uses of the inventory is to aid in the selection of men and women to be trained as teachers. (2, 4)

For some time the School of Education of the State College of Washington has been studying the problem of who will make a successful teacher. At the present time all types of information are being collected concerning the teacher trainees. In addition to scores on intelligence tests and personality inventories and grades, evaluation sheets are filled out on each student in every course he takes in education. On these forms are recorded how the student words with others, plans his work, leads groups, and other activities involved in teaching. In addition, a large amount of biographical data, interests and hobbies, past experiences with young people, etc. are collected on other forms. It is and has been a blunderbuss approach, but it is hoped that in the years to come, some insights into what makes an effective teacher may come from it.

During the academic year 1950-1951, with the permission of Dr. Cook, the MTAI was administered to second semester freshmen in their first course in education, An Introduction to Education, [illegible] to sophomores in their second course in education, Child Development. Altogether more than 300 students participated in the study.

Scores on the MTAI were first compared with scores on the American Council on Education Psychological Examination, over-all grade point average, and grades received in education courses. The means and standard deviations of these measures are shown in Table I for the two groups of students. It was found that the sophomore group was significantly higher than the freshman group on all four variables when student's "t" was used as a test of signifigance. There is no doubt that a part of each of these differences was brought about by the

TABLE I

MEAN SCORES OF FRESHMEN AND SOPHOMORE EDUCATION STUDENTS ON THE MTAI, ACE (TOTAL SCORE) AND GRADE POINT AVERAGES

		MTAI		ACE(T)		GPA		GPA-Education	
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Freshmen	202	27.7	25	101	21	2.4	.54	2.48	.71
Sophomores	124-141	49.6	26.7	107.9	19	2.58	.48	2.87	.68

fact that the sophomores were a more select group than the freshmen. As far as the MTAI was concerned, the fact that the sophomores were taking a course in child development and were having experiences working with children also contributed to the difference between the two groups. Table II shows how the results reported above are in substantial agreement with findings in other institutions.

The relationships between the MTAI and scores on the ACE, and over-all grade point average and grades in education were computed using the Pearson "r." The results are shown in Table III. All of these correlation coefficients except one, freshman MTAI scores and freshman grades in education courses, are significant at the one per-cent level of confidence.

As previously mentioned, a large amount of information is contained in the confidential folders of each student. Included are: (1) an information form filled out by the student which asked for personal data, high school and college activities, interests, activities with children and adolescents, and a short paragraph on why the student chose teaching as a career and (2) reports and grades by the instructors, including anecdotal records, evaluations, and recommendations as to the candidate's possibilities in the area of teaching. The records of the eight students in both the freshman and sophomore groups who scored highest and lowest in the MTAI were analyzed to see what sort of an individual each was.

Some degree of consistency was found between the scores of the sophomores on the MTAI and the ratings of the instructors. Such statements as "enthusiastic about teaching," "has keen interest and should get along well with children," and "will attract children" accompanied a high score on the inventory. Low scores went along with such comments as "doubtful how much appeal she will have to kids" and "long way to go yet in understanding people."

Backgrounds of experiences and interests also provide clues to level of performance on the inventory. Contributing factors to high scores seemed to be: (1) previous experiences and activities with young people, (2) interest in teaching as a profession, (3) desire to work with young people, and (4) experiences in social and wel[illegible] work. Contributing factors to low scores seemed to be: (1) lack of previous experiences with children, (2) lack of particular interest in teaching, and (3) limited background of experiences in working with others.

The case studies of the freshmen showed a similar pattern for the high scoring students, but there was little agreement between material in the student's folder and his score on the MTAI for the low scores. One reason for this may be that the amount of material collected on these freshmen was limited to one course, to one instructor, and to one situation.

TABLE II

MTAI SCORES OF STUDENTS IN EDUCATION AT SEVERAL TEACHER TRAINING INSTITUTIONS

	Freshmen WSC	Sophomores WSC	Beginning Ed.* Juniors U. of Minn.	Graduating Ed.* Seniors U. of Minn.	Grad. Stud.* in Educ. U. of Mo.
N	202	141	311	257	115
Mean	27.7	49.6	41	52	48.2
S.D.	25	26.7	27.2	22.5	27.5

*As reported in Dr. Cook's manual.

TABLE III

CORRELATION BETWEEN MTAI SCORES AND THREE OTHER VARIABLES

	ACE Total Scores	Overall GPA	Grades in Education
Freshman MTAI Scores	.257	.289	.146*
Sophomore MTAI Scores	.385	.296	.518

*Based upon one course.

Conclusions

As a result of this study, one may conclude:

1. That there was a significant relationship between scores on the MTAI and total scores on the ACE Psychological Examination.
2. That there was a significant relationship between scores on the MTAI and over-all grade point average. There was a definite relationship between MTAI scores and grades in education for the sophomores but not for the freshmen.
3. That students who scored high on the MTAI tended to have a background of experiences with young people, an expressed interest in teaching and were rated as good prospects by their instructors. Poor students tended to show the opposite of these traits.

We feel that the above study is a preliminary one and we realize that it is limited to success in teacher training and is not concerned with success as teachers. But if the MTAI is used along with other measures in selection, we believe that selection techniques now in use can be improved.

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EXCERPTS FROM TWO INSTRUMENTS FOR APPRAISING TEACHING COMPETENCY

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Student Reaction Inventory

Brief Description of the Instrument. —The Student Reaction Inventory consists of 200 statements selected from remarks which students have been known to make about their experiences in particular classes. The items are in the form of statements of feeling of the individual toward some aspect of the instructional environment.

Summary of Directions. —The student was asked to read each item carefully and to decide whether or not it was the sort of remark he might have made about the particular class in which the data were gathered. If so, he was to respond "agree" by blackening the "A" space on the answer sheet. If he decided that the statement was not the kind of remark he would make, he was to respond "disagree" by blackening the "D" space on the answer sheet. If he was "uncertain" about his feelings he was to blacken the "U" space. Thus three response choices were given for each item.

Examples of Items (Selected from SRI).

1. No matter what I do, I can't seem to satisfy the teacher. (Category 2. See category titles below.)
19. When I needed help in this course I always went to other students to get it. (Unanimity of category classification was not achieved.)
40. I think I'll be able to use the things I've learned in this course when I get out of school. (Category 5.)
51. I must admit I don't know what we are doing in this class much of the time. (Not classified.)
114. I have had no trouble working with the other members of the class. (Category 5.)
128. I have to force myself to study in this class. (Category 4.)
173. A boy never gets a fair break in this class. (Category 1.)
123. I work hard in this class to do better than I've done before. (Categories 1, 4 and 5.)

Tentative Category Titles

Items of both the Student Reaction Inventory and the Teacher Characteristic List have been classified into the following categories:

1. Quality of classroom government.
2. Clarity of objectives.
3. Cooperative group work.
4. Incentive quality.
5. Motivational intensity level.
6. Provision for students' psychological needs.
7. Individualization of instruction.

Teacher Characteristic List

Summary of Directions. —The principal was asked to respond to each item according to the degree to which the item characterized the teacher's behavior. The principal was given five response choices as follows:

1. The statement characterizes the teacher's work.
2. The statement characterizes this teacher's work to a large extent, but not entirely.
3. The statement characterizes this teacher's work only to a limited degree.
4. The statement seldom or never characterizes this teacher's work.
5. No opportunity to observe this teacher's work with respect to this item.

The ten items of the Teacher Characteristic List which pertained to motivational intensity level (category 5) are given below. These items and the sixty pertaining to the other six teacher characteristics were arranged in random order on the Teacher Characteristic List.

35. Pupils work in this teacher's class only to avoid punishment.
62. Pupils avoid attending this teacher's class whenever a plausible excuse can be found.
10. Class work is not stimulating to students in this teacher's classes, so they do a minimum of work.
56. Although pupils with low ability seem interested in this teacher's classes, those with high ability appear bored.
20. While the pupils with high ability are interested in

this teacher's classes, those with low ability seem unaware of what is going on.

48. Most pupils seem interested in this class but give little evidence of outside preparation.
26. Most pupils do fair work in this teacher's classes, and many also seem interested.
65. Pupils appear interested in this teacher's classes, and seem to devote some time to outside preparation regularly.
61. Most pupils appear highly interested in this teacher's classes, and give considerable time to preparation for them.
64. Most pupils seem highly interested in this teacher's classes, and some have adopted hobbies related to the class activities.

The Method of Reciprocal Averages

Briefly described, the method consisted in assigning a priori weights as a first approximation and adjusting these weights in successive iterations. The sum of the responses weighted by these first-approximation weights was obtained for each individual case. On the second approximation, the item-response weight was set proportional to the mean total score (first approximation) for the subgroup of cases giving that response. The process was reiterated until there was no further change in the response weights and the configuration of weights was stabilized. Three iterations beyond the initial approximation were sufficient in the instance studied.

The method results in a set of weights with the following properties:

1. The reliability of each item and the internal consistency of the weighted inventory are maximized.
2. The correlation between item and total score is maximized and the product moment correlation coefficient becomes identical with the correlation ratio.
3. The relative variance of the distribution of scores (coefficient of variation) is maximized.
4. The relative variance of item-scores within a single case is minimized.
5. The correlation between an item and total score is proportional to the standard deviation of the item-weights for that item.
6. Questions which bear no relation to the total-score variable are automatically weighted so that they exert

TABLE I

ITEM RESPONSE WEIGHTS ON THE FIRST FIVE ITERATIONS
TEACHER CHARACTERISTIC LIST; CATEGORY 5:
MOTIVATION INTENSITY LEVEL

TCL Item No.	Response	Initial Weight Assigned	Iterations					Frequency of Response
			1	2	3	4	5	
35	1	0	0	0	0	0	0	1
	2	1	2	1	1	1	0	8
	5	5						0
	3	7	3	2	1	1	0	8
	4	9	8	8	8	8	8	63
62	1	1	1	0	0	0	0	5
	2	2	5	5	5	5	5	18
	5	5						0
	3	7	4	2	1	0	0	8
	4	8	8	8	8	8	8	49
10	1	3	5	4	4	4	4	13
	2	4	4	3	3	3	2	13
	5	5						0
	3	6	5	4	4	4	4	14
	4	7	8	9	9	9	9	40
56	1	3	2	0	0	0	0	3
	2	4	5	4	3	3	2	7
	5	5						0
	3	6	6	5	5	5	5	26
	4	7	8	8	8	8	8	44
20	1	3	2	1	1	1	0	7
	2	4	3	1	1	1	0	7
	5	5						0
	3	6	7	6	6	6	6	36
	4	7	9	9	9	9	9	29

TABLE I (Continued)

TCL Item No.	Response	Initial Weight Assigned	Iterations 1	2	3	4	5	Frequency of Response
48	1	7	6	5	5	5	5	6
	2	6	7	7	7	7	7	18
	5	5						0
	3	4	6	5	5	5	5	32
	4	3	7	7	7	7	7	24
26	1	7	9	9	9	9	9	33
	2	6	6	6	6	6	6	22
	5	5						0
	3	4	3	2	1	1	1	16
	4	3	5	5	5	5	5	9
65	1	7	9	9	9	9	9	41
	2	6	7	7	6	6	6	17
	5	5						0
	3	4	3	2	2	2	2	12
	4	2	2	1	0	0	0	10
61	1	8	9	9	9	9	9	30
	2	7	7	7	7	7	7	24
	5	5						0
	3	2	4	3	3	3	3	17
	4	1	2	1	0	0	0	9
64	1	9	9	9	9	9	9	14
	2	8	8	8	8	9	9	17
	5	5	8	8	8	9	9	11
	3	1	6	6	6	5	5	21
	4	0	3	2	1	1	0	17

no effect on the scoring.

The method is particularly fitted for dealing with large numbers of items with discrete and qualitative, rather than quantitative responses. The assumptions underlying the method seem to be:

1. That there exists some variable which is measured in common by the majority of the items included in the Inventory.
2. That this is the variable which it is desired to measure.
3. That it is possible to assign weights to the items on a a priori basis which bear some recognizable relation to the optimum weights. (This last assumption is convenient, but not necessary. If assumption (1) holds, a random distribution of initial weights should eventually produce the optimum weights.)

The data in Table I illustrate the successive changes for item response weights in one category of the Teacher Characteristic List, Motivational Intensity Level. The final weights for the several responses to each item (given as iteration no. 5) show only four changes from the corresponding weights of iteration no. 4. This situation indicates that another iteration is desirable to determine whether or not those of iteration no. 5 are the optimum response weights. Since all the response weights (in iteration no. 5) for item 48 are near to one another (5 or 7) one sees that this item is not contributing as much weight to the differentiation among teachers as are items like 65 and 61 whose response weights differ more widely.

DESIGN FOR LONG RANGE RESEARCH IN TEACHER EDUCATION*

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AS DIRECTOR OF TEACHER Education there are certain things I need to know, which I cannot know without research. The same is true of others who are responsible for the education of teachers.

What kind of students shall we accept as good potential material for education as teachers? To answer this we must know what personality traits are essential to profiting by the education our institutions can give. So far, there is only a vague negative answer indicating extreme types to be avoided.

What kind of learning experiences shall we give students to be sure that they leave our institutions reasonably well prepared for the vitally important work they have to do? What characteristics and behaviors and understandings are we to try to help them develop during their four or five years with us? The only answers we have are based on deductive reasoning and unscientific observation—probably not wholly wrong, because common sense is often later confirmed by research, but lacking any real validation. How far do our "courses" contribute to the goals which we hope are sound? No educational scientist would claim that our grades and final examinations are an adequate evaluation.

Then how do the people who employ our products—in large cities by competetive examination and in other communities by the personal judgment of the superintendent (often a sound judgment, due to long, but unscientific experience)—know what they are getting and how effective those they select are going to be?

If the employers of the students whom we have tried to prepare for their jobs are up to date, they have in-service training courses. How much good do they do? How much effect do they have on the actual practice of the teachers? Who knows?

In spite of half a century of educational research, based on ninety years of psychological research, all we can really say in answer to these crucial questions is that we have played our hunches, based on unquantified observations and unvalidated hypotheses, or upon studies that we hope are pertinent.

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*Summary of address at the annual banquet of the American Educational Research Association, Boston, April 7, 1952.

Isn't it high time we really set about a basic series of scientific researches directed right at the heart of these problems? Educational research has advanced sufficiently now so that we really know how to work in this most fundamental and necessary of all fields of educational research.

I am not reporting on a piece of research already accomplished, or even in process beyond the most preliminary skirmishings. If Brooklyn College gets the foundation money it is now actively seeking, we shall at least make a substantial start on the project; but before the basic problems are fully solved, many, many persons, school systems and institutions will have to play their part—this is not a one-man or one-institution job.

Let me sketch the broad general design of this fundamental research. My colleague, Louis Heil, Director of Educational Research and Evaluation at Brooklyn College, aided by Helen Brell and Maurie Appell and others of our staff, have filled in enough detail as to what we hope to do in the next ten or fifteen years to occupy 45 pages of typing; but much of that will be changed and refined as we go along, and, I hope, many of you will, during the next decade, be filling in the gaps we shall necessarily leave, and creating whole new sections of the basic design. The Educational Testing Service, which we hope to associate with us (or with which we hope to associate ourselves) has already cleared much ground for us. A committee working under a Russell Sage Foundation grant has been gathering material highly pertinent to the work we propose. A number of you, and especially our Association's committees in this field, have seen the problem and made valiant starts toward its solution, no one more than A. S. Barr, University of Wisconsin. There is no scientific dictum more true than the old adage that the proof of the pudding is in the eating. The ultimate—and sole—criterion of teacher effectiveness is the growth of the children (or students) who are taught.

Our first question is, therefore, as in all research, a philosophic one—what kind of growth do we want to foster in our children? This is a question of values. Fortunately, in our culture, there is a fair degree of consensus among those who have given the matter thought as to what some of these basic values are. Few thoughtful persons would deny the desirability of helping children and youth to achieve emotional and social adjustment—and we have a pretty fair idea of what we mean by these terms: that we want them to grow in ability to think accurately, objectively, and in terms of ascertainable facts; that we want them to acquire, understandingly and functionally, those skills in dealing with language and quantity that are essential to effective living in our present society; that we want them to have a basic framework of knowledge of the world around them and how it came to be what it is, and to know how to fill in that framework wherever and whenever it is necessary for them to do so; that we want them to have an appreciation of the esthetic side of life and to be able to find expression of their creative urge toward beauty; that we want them to grow in appreciation of their fellow men, in ever wider circles, and to feel a sense of responsibility toward the well being of ever more inclusive societies, and to be able to work cooperatively with their fellow human beings toward the achievement of socially desired goals.

Such a list of values in not all-comprehensive—it omits, for example, certain vital religious values because of the wide divergence of opinion in regard to them and the constitutional secularism of American public schools. It is a list that would be differently worded by different persons. It suffices, however, to illustrate the fact that there is a wide area of agreement as to what are at least some of the values which we hope young people will attain as they grow up and to the attainment of which we expect teachers to contribute. Each is susceptible of being analyzed into behavioristically describable elements and therefore to some degree of evaluation and quantification.

Our first step, then, is to select a reasonable sampling of the kinds of growth to which we desire to have teachers contribute.

The next step is to use existing instruments or prepare new ones that will measure the kinds of growth we hope to foster. We must apply these at the beginning and end of a period of time—e. g., an academic year—to know which growths are measurable.

Since children in a given grade come from many kinds of homes, from a wide range of experiences both in school and out of school, we must see whether there are certain clusters or categories of children whose growth along different lines is largely conditioned by their past experience.

We must also discover what characteristics and kinds of behavior on the part of teachers are most closely associated with the growth of various clusters of children. A difficult, but essential part of our job will be to segregate, as far as possible, the direct influences of the teacher from the out-of-school factors and such school influences as are not directly attributable to the teacher. An absolute segregation is probably impossible, but with wide samplings and techniques known to all of us, predominant teacher-influence should be discoverable.

Under some teachers we may expect to find decidedly more growth in certain characteristics than under some others. By studying the extremes of this distribution, it should be possible to identify distinguishing characteristics as between the most effective and the least effective teachers. These characteristics will be found by close observation, by a study of the teachers' past training and experience, and by whatever other forms of evaluation prove to be most effective.

We should not expect to find one best pattern. Rather, our hypothesis should be that there are a number of different patterns of high effectiveness and a number of different groupings of characteristics that make for relative ineffectiveness.

Having identified, tentatively, some of the characteristics that seem to result in favoring effective growth in children along a number of desired lines, and to favor this in children of divergent backgrounds, we will be ready for the next step.

Which of these desirable characteristics of teachers can be produced or augmented in college, or afterwards while actually teaching? What kind of pre-service and in-service experiences and learnings aid measurably in their development?

As we pursue this set of studies it is probable that we shall find that some students (or teachers in service) profit more from one type of experience that from another, while other students profit more from a different set of experiences. What are the distinguishing characteristics of students who profit most from Type A of learning experiences as against those who profit most from Type B—or C or D? Since there is a practical limit to the number of types of experience an institution can provide, what are the types which will produce the results we want in the largest number of our students.

Then, for selective purposes, how can we find out which applicants for training as teachers are so unlikely to be able to attain the characteristics we have found necessary for effective teaching, through the experiences we are able to provide, that they should be guided into other careers?

The selection of teachers for positions, and the evaluating of in-service learning experiences, will follow a similar pattern.

All results will be tentative—more in the nature of promising hypotheses than of positive conclusions—until we put them to the ultimate test. Do those who have been selected for training and subjected to the learning experiences that have evolved from our research, actually produce more growth of the kinds we want, in more fields and in children having a wider range of experience and personal characteristics, than do teachers who have not been so selected and trained? If they do, we shall have a firm foundation for future building—for improving our evaluative instruments, for improving our selection, for improving the kinds of learning experiences we provide in our colleges and for our teachers in service.

Will such research be difficult and complicated? Undoubtedly. Impossible? No. It is a long road, but we have, in the past fifty years, evolved the understanding, the insights, and even some of the techniques that make the following of this road possible.

In brief, what are we trying to do? We want to measure the growth that takes place under the most effective teachers in contrast with that which takes place, or fails to take place, under the least effective teachers, in a variety of ways and in children of widely varying backgrounds. We want to discover what patterns of teacher behavior and understanding distinguish the more effective teachers from the less effective ones. We want to know what types of persons entering our colleges are likely to achieve these characteristics if given the most effective learning experiences we can devise. We want to discover what these most effective learning experiences are so that we can evaluate and improve our programs of teacher education. We want to test our products before they actually take responsibility for educating children and youth. And we want to submit the whole program to the ultimate test of whether or not teachers who have been through it actually help the boys and girls entrusted to them to grow effectively in the achievement of the values which we agree are necessary for the fulfillment of their potentialities as persons and as contributing and responsible members of society.

The job is big enough to engage the energies of all of us over many years. Each step of the way is in itself worth-while. The goal is the goal of education.

Research News and Communications

Lawrence P. Blum, Student Personnel Service, University of Wisconsin Extension
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A study of problems of elementary school teachers as reported by new teachers, experienced teachers, and administrators is being conducted at San Francisco State College. The purpose of the study is to discover the problems perceived by these three groups and to find out what pre-service training and preparation is regarded as most helpful. The procedure involves the use of open-ended questionnaires with a population of elementary teachers in San Francisco, Richmond, and Oakland, California. Some analysis of questionnaires has been completed and patterns are beginning to emerge which differentiate the groups. The study is scheduled for completion during the spring or summer of 1953. Further information can be secured from Eloise Mays, Assistant Professor of Education, San Francisco State College.

Research and experimentation in character education underway at Albany, California. The purpose of this project is to diagnose the needs in character development as a foundation for building a curriculum in this area. Several methods are being used: (1) a rough study of the economic status of families in the school district (by analyzing and classifying occupations); (2) an analysis of the mobility of children; (3) sociometric study of social relations; (4) analysis of attitudes and social concerns through a variety of open-ended devices such as sociodrama, open-ended themes, discussions, and stories. A preliminary report has been made to the school board and the project is expected to terminate in the spring of 1953. Further information can be secured from Hilda Taba, Professor of Education, San Francisco State College, or William Woolworth, Director of Curriculum, Albany, California Public Schools.

Projects involving psychological measurement. One of these projects involves the interrelationship between leadership (measured sociometrically), attitudes toward authority (measured by sentence completion test), prejudice (measured by sentence completion test), and personality (measured by the Minnesota Multiphasic Personality Inventory. Another project is concerned with working out the reliability and validity of a test of insight and empathy using a population of approximately 100 college freshmen. These studies should be completed in the spring of 1953 and further information concerning them can be secured from Henry Lindgren of San Francisco State College.

Study inter-person relationships of pupils in the tenth grade of the Los Angeles schools. An effort is being made to uncover some of the prestige patterns existing among high school pupils and to develop a machine-scored method of obtaining guess-who ratings and sociometric data. A group of 450 tenth grade pupils will make guess-who rating and sociometric choices on mark sensing IBM boards. Additional data as sub-ratings and inventory results will be obtained. This study is based on these three hypotheses:

1. Pupils who differ with respect to intelligence, grades, social status, and ratings by the peer group, rate their sociometric choices differently.
2. Unreciprocated choices are rated higher by the peer group on measures of social acceptability than are the persons making the choice.
3. A machine-scored method is economical and satisfactory for obtaining these ratings.

Further information can be secured from Evan R. Keislar, Assistant Professor of Education, University of California at Los Angeles.

Research relative to budget and educational program. A continuous research program to furnish data for decisions relative to the budget and educational program in a school system has been organized. Monthly reports to the superintendent will be based on land utilization studies, opinion surveys, tabulation of retail sales, rentals, population growth, and business changes. Further information can be secured from William S. Briscoe and Julius Stier of the University of California at Los Angeles.

Critical analysis of general education programs. Dr. A. LeRoy Bishop of Los Angeles State College reports that the faculty is conducting a critical analysis of their general education program, including liberal arts majors, for the purposes of reorganizing and integrating the curricula to meet the needs of the college and community. The faculty is organized to study the following problems: (1) needs of the students and the community, (2) the use of experts and consultants in higher education for direction, (3) released time for the committee to visit other institutions, (4) a comparative analysis of Los Angeles State College with other institutions. Dr. A. D. Graves, Dean of Educational Services, has organized six faculty committees entitled: Social and Civic Adjustment, Aesthetic Appreciation, Understanding the Natural World, Vocational Orientation, Self-Understanding, and Research.

The Temple University Reading Clinic for 1954 is announced. Copies of the complete program which will be held January 25-29, 1954, can be secured during November, 1953, by writing to Dr. Emmett A. Betts, The Reading Clinic, Temple University, Philadelphia, 22, Pennsylvania. The 1953 Reading Clinic was held February 2-6, 1953, and was attended by delegates from thirty-five states, Canada, and Norway. These included classroom teachers, school administrators, psychologists, and vision and reading specialists and represented the largest number to attend the Reading Clinic. Under the guidance of specialists, the conferees were trained in practical classroom techniques for the teaching of reading and correction of reading difficulties. Laboratory sessions were provided to give delegates an opportunity to practice certain of these techniques under the supervision of trained specialists.

Fourth Mental Measurements Yearbook is announced. This volume, edited as were its three predecessors by Oscar K. Buros, contains 1189 two column pages covering the material on testing from 1948 through 1951. The section "Tests and Reviews" lists 793 tests, 596 original test reviews by 308 reviewers, 53 excerpts from test reviews in fifteen journals and the "Books and Reviews" section lists 429 books on measurement and 758 excerpts from book reviews in 121 journals. The book sells for $18.00 and is available from the Gryphon Press, 220 Montgomery Street, Highland Park, New Jersey.

Teachers College studies personnel training program. The Department of Educational Administration at Teacher's College, Columbia University, is making an intensive study of the student-faculty, inter-student, and inter-faculty relations in that department. The results of the study will be used to implement a guidance program which is designed to meet the personal and professional needs of graduate students who are to be educational administrators. Further information can be secured from T. C. Clark, Teacher's College, Columbia University.

Medical College of Virginia publishes research volume. In an eighty-page volume entitled The Student in Medical and Health Education the results of thirty-one research reports are presented which relate to the selection and training of students in medicine, dentistry, pharmacy, and nursing. The volume can be secured from A. W. Hurd, Director of the Bureau of Educational Research and Service at the Medical College of Virginia.

Students' post-high school plans being analyzed at Ohio University. A five-year study was begun in the spring of 1951 to determine the factors which affect the post-high school adjustment of youth, with special reference to college attendance. The research, directed by George E. Hill, Professor of Education at Ohio University, is conducted by means of testing and interviewing while the students are in the 11th and 12th grades, and annual follow-up studies made by interviews and correspondence. The study is prompted by the fact that a very small proportion of south-eastern Ohio high school graduating classes attend college. As has been found in previous studies, motivational factors apparently play an important role in the students' decisions regarding college entrance. Economic barriers, while important, seldom keep able young people from going to college.

Research Abstracts and Bibliographies

T. A. Lamke, Iowa State Teachers College, Cedar Falls, Iowa

Wagner, Mazie E., Anticipatory Examinations for College Credit. University of Buffalo Studies, Vol. 20, No. 3 (Buffalo, N.Y.: University of Buffalo, 195 26 pp., 50¢.

Reports one university's twenty years of experience in reducing the length o a college course by allowing college credit through examination.

Werner, Heinz, and Edith Kaplan, The Acquisition of Word Meanings: A Developmental Study. Monographs of the Society for Research in Child Developmen Vol. XV, No. 1 (Evanston, Ill.: Child Development Publications, 1952), 120 pp., n.p.

An endeavor to investigate experimentally the processes underlying the acquisition of word meaning through verbal contexts.

West, Leonard J., College and the Years After (New York: Board of Higher Education, College of the City of New York, 1952), 129 pp., n.p.

A readable account of a follow-up study of two graduating classes (1941 and 1947) of the four municipal universities. The survey is both a study of the status of the graduates and a summary of possible guides for curriculum changes.

Wilson, Frances M., and Morris Krugman, Studies of Student Personnel (Albany, N.Y.: State Education Department, 1951), 197 pp., n.p.

A comprehensive study of the characteristics of the children in New York City vocational high schools, their reasons for choosing a vocational high school rather than an academic one, their high school careers, and their post-high school experiences.

Youth Discussion: Patterns and Techniques (Columbus, Ohio: The Junior Tow Meeting League, 1953), 32 pp., no charge.

A summary of the patterns and techniques successfully used in youth discussion activities.

Zim, Herbert S., Science for Children and Teachers (Washington, D.C.: Association for Childhood Education International, 1953), 55 pp., 75¢.

A bulletin providing suggestions and materials for science teaching in the elementary grades. Discusses the place of science in the elementary curriculum, suggests equipment, and explores community resources which might aid in science learning.